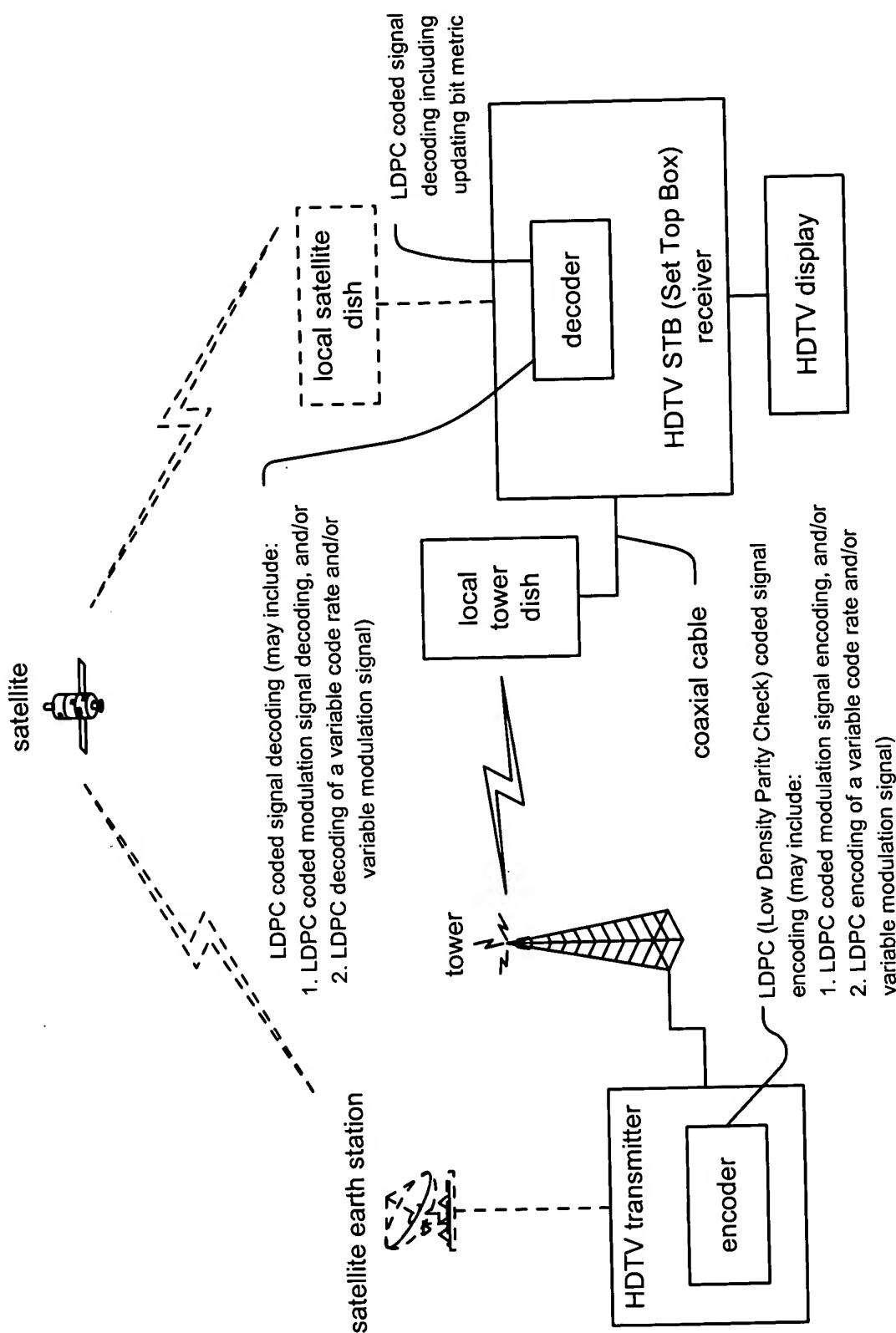
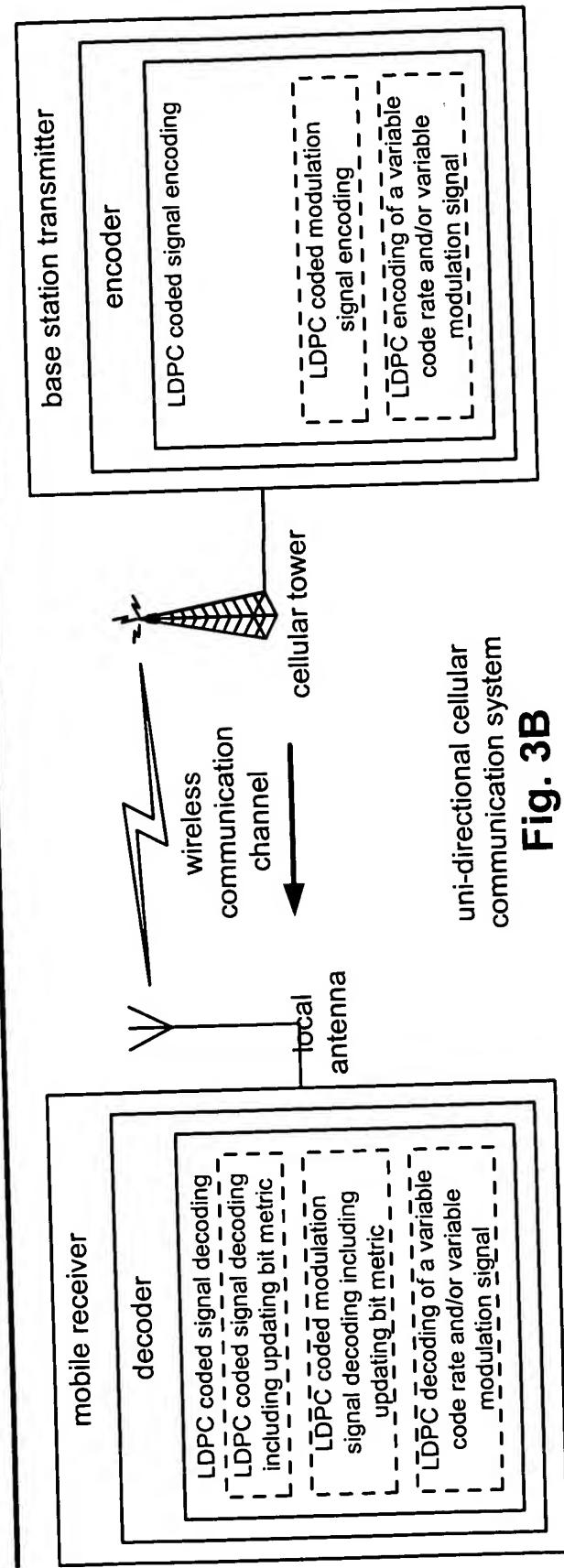
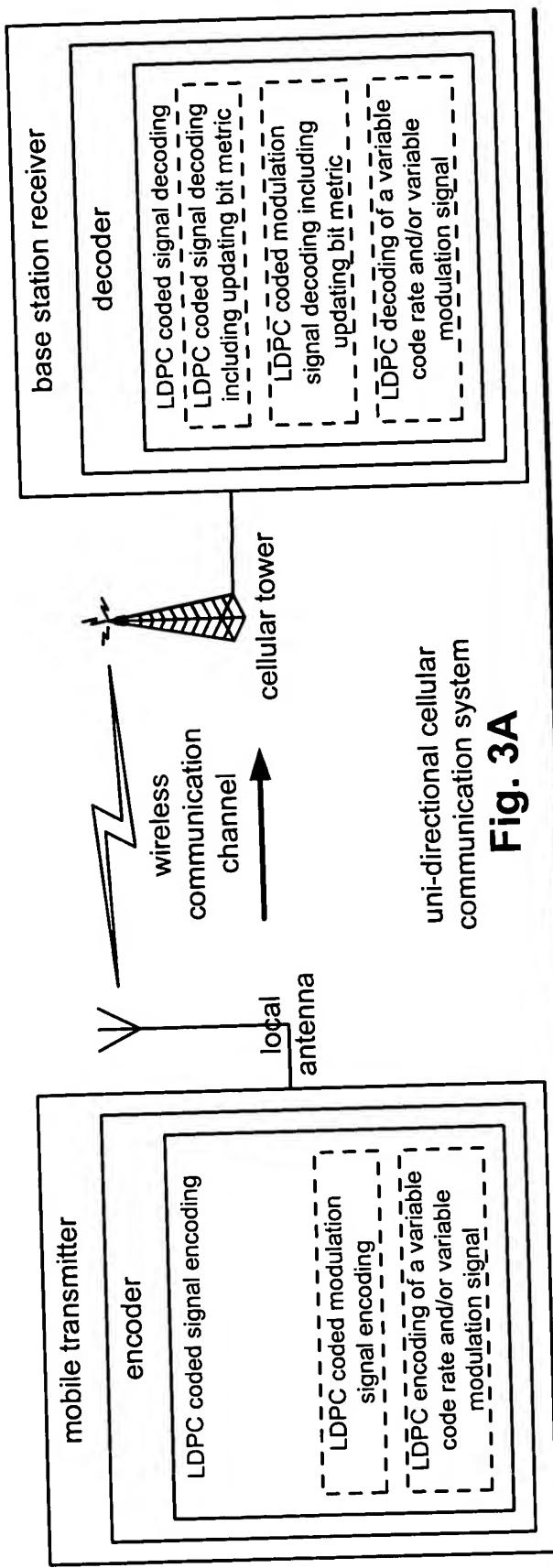


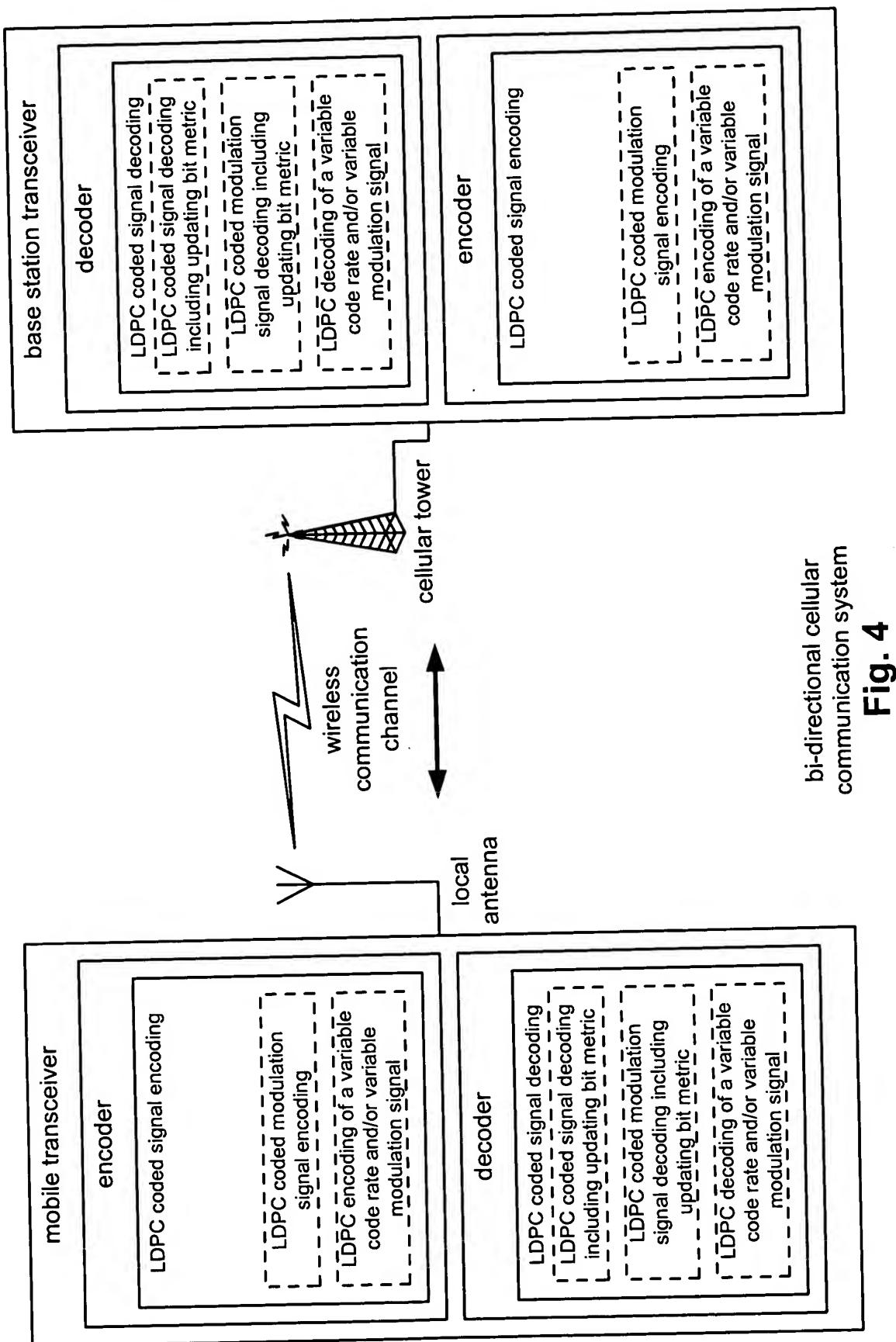
**Fig. 1**

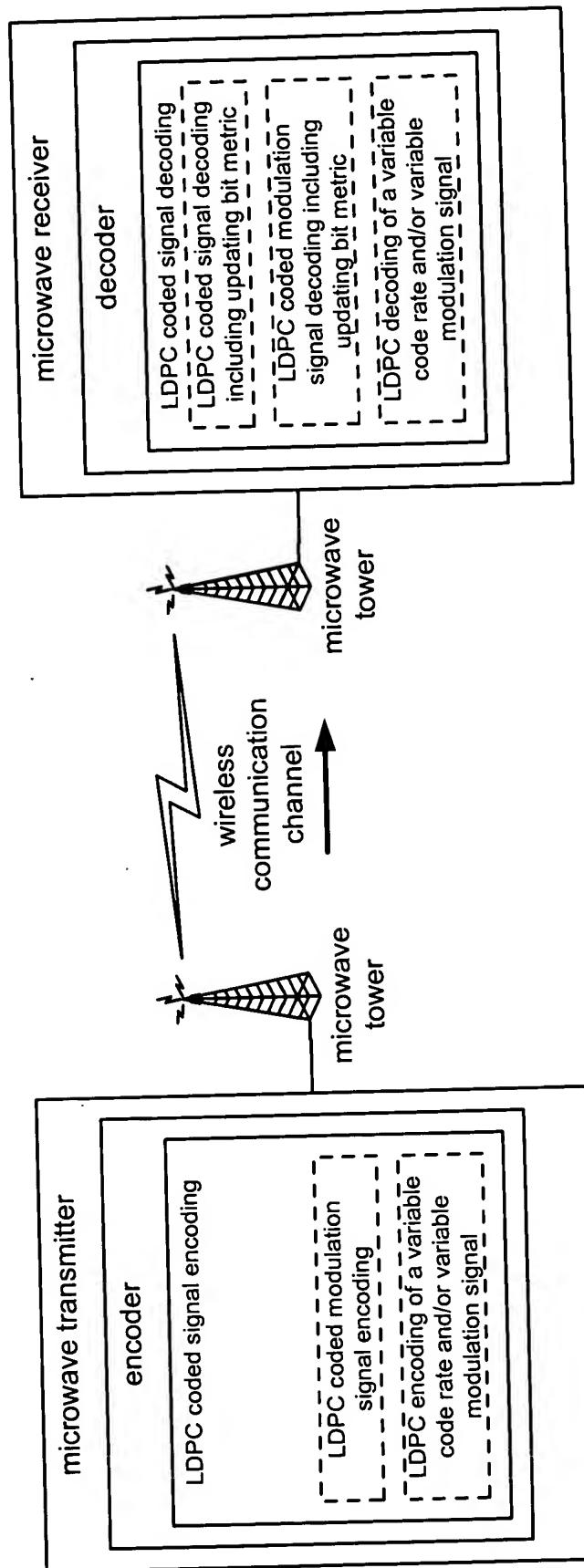


HDTV (High Definition Television) communication system

**Fig. 2**

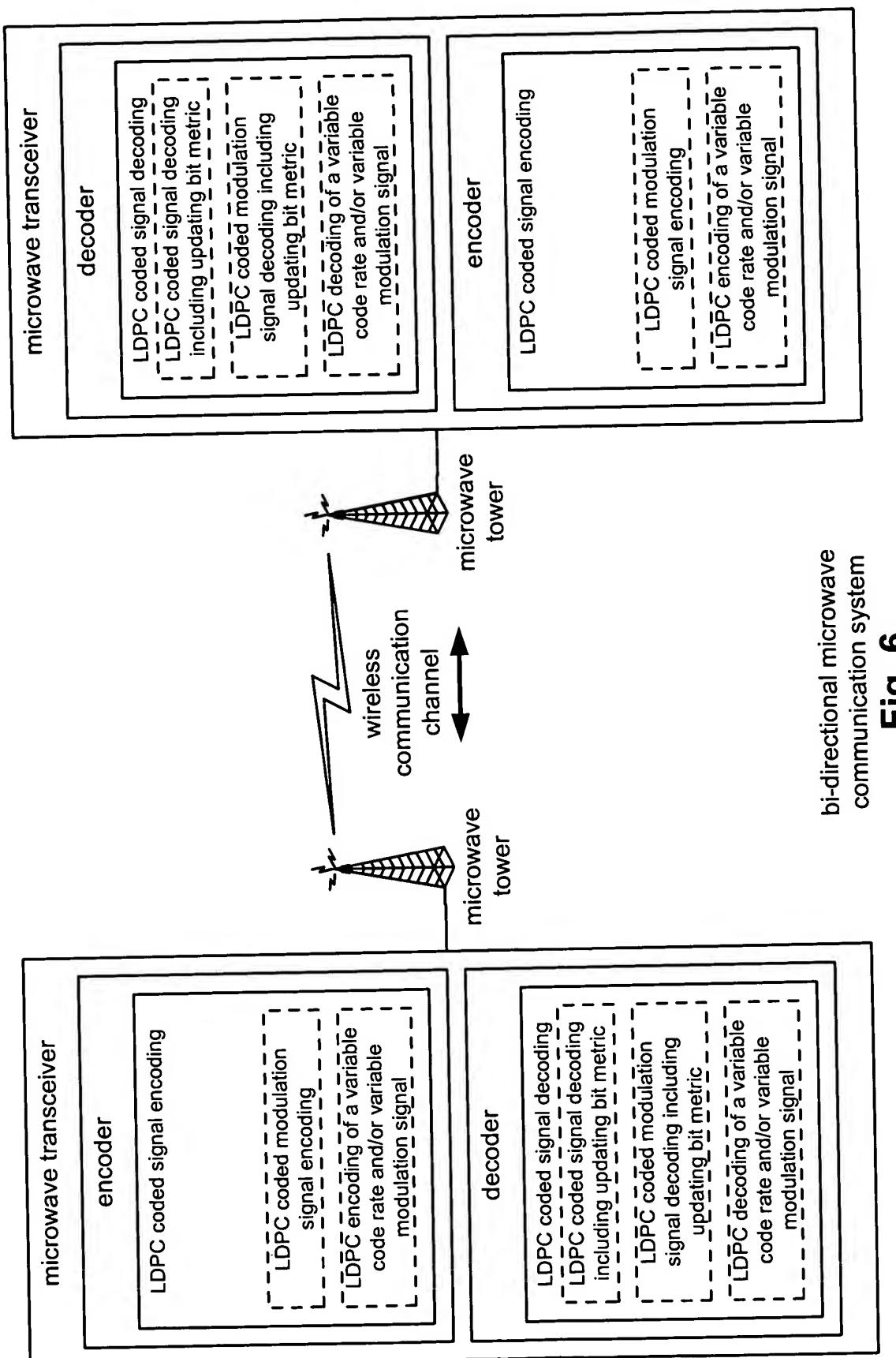




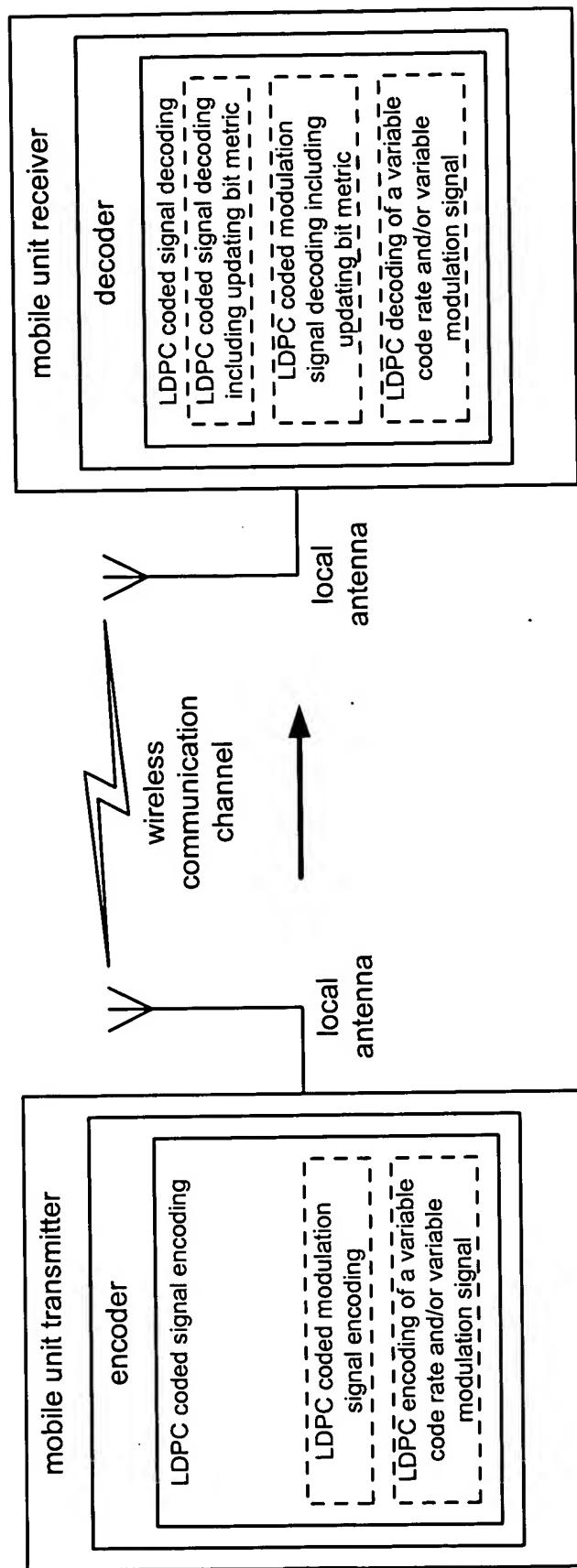


uni-directional microwave communication system

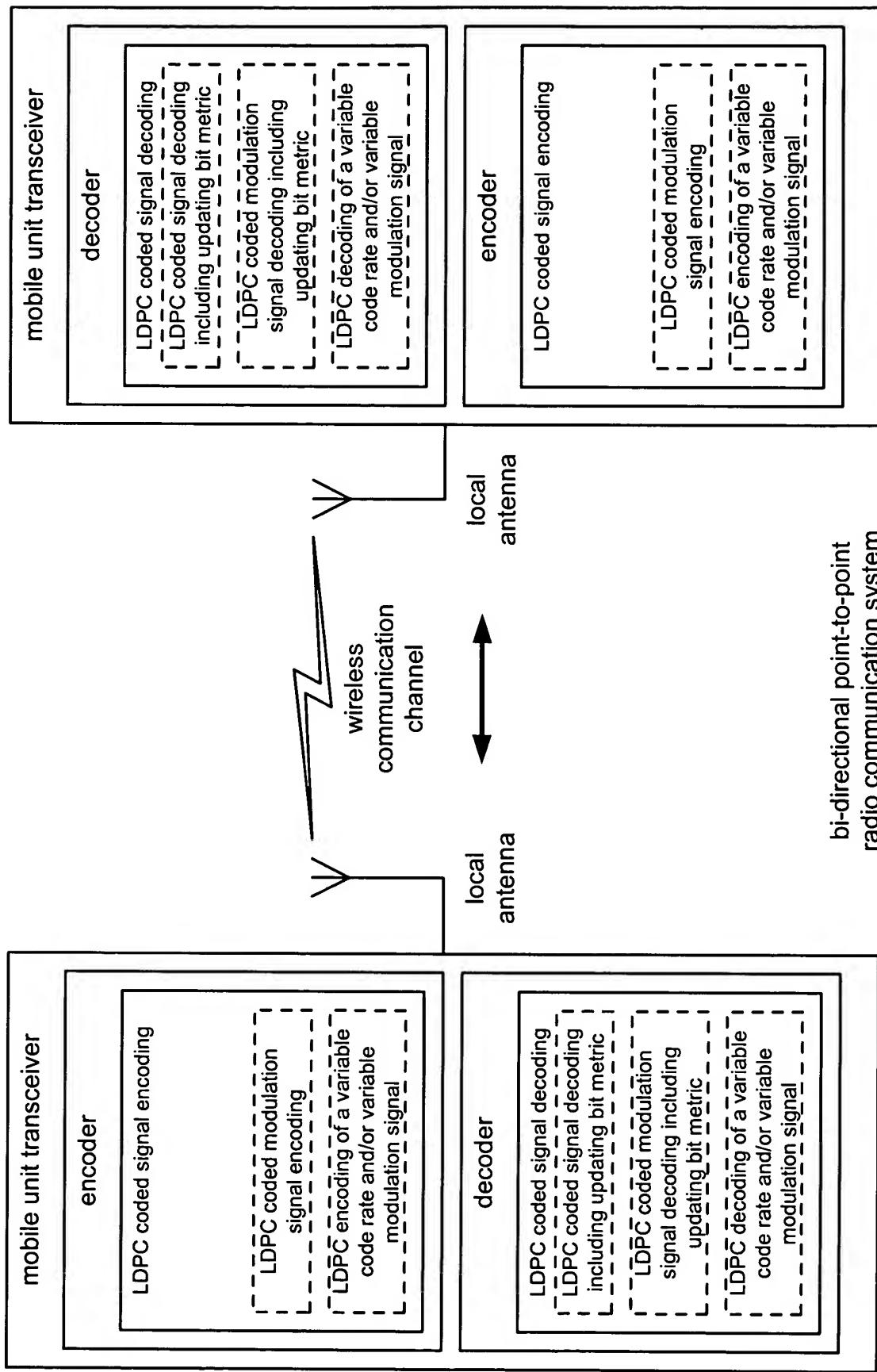
**Fig. 5**

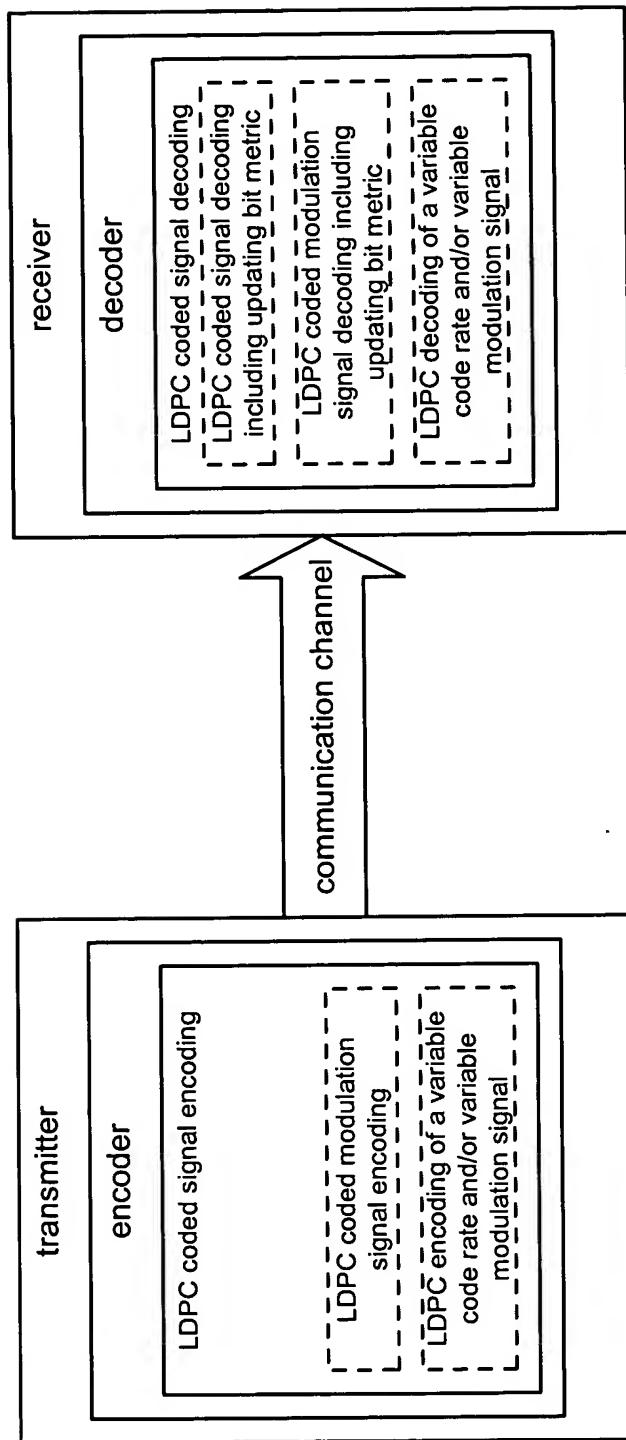


**Fig. 6**



uni-directional point-to-point radio communication system  
**Fig. 7**

**Fig. 8**



uni-directional communication system

**Fig. 9**

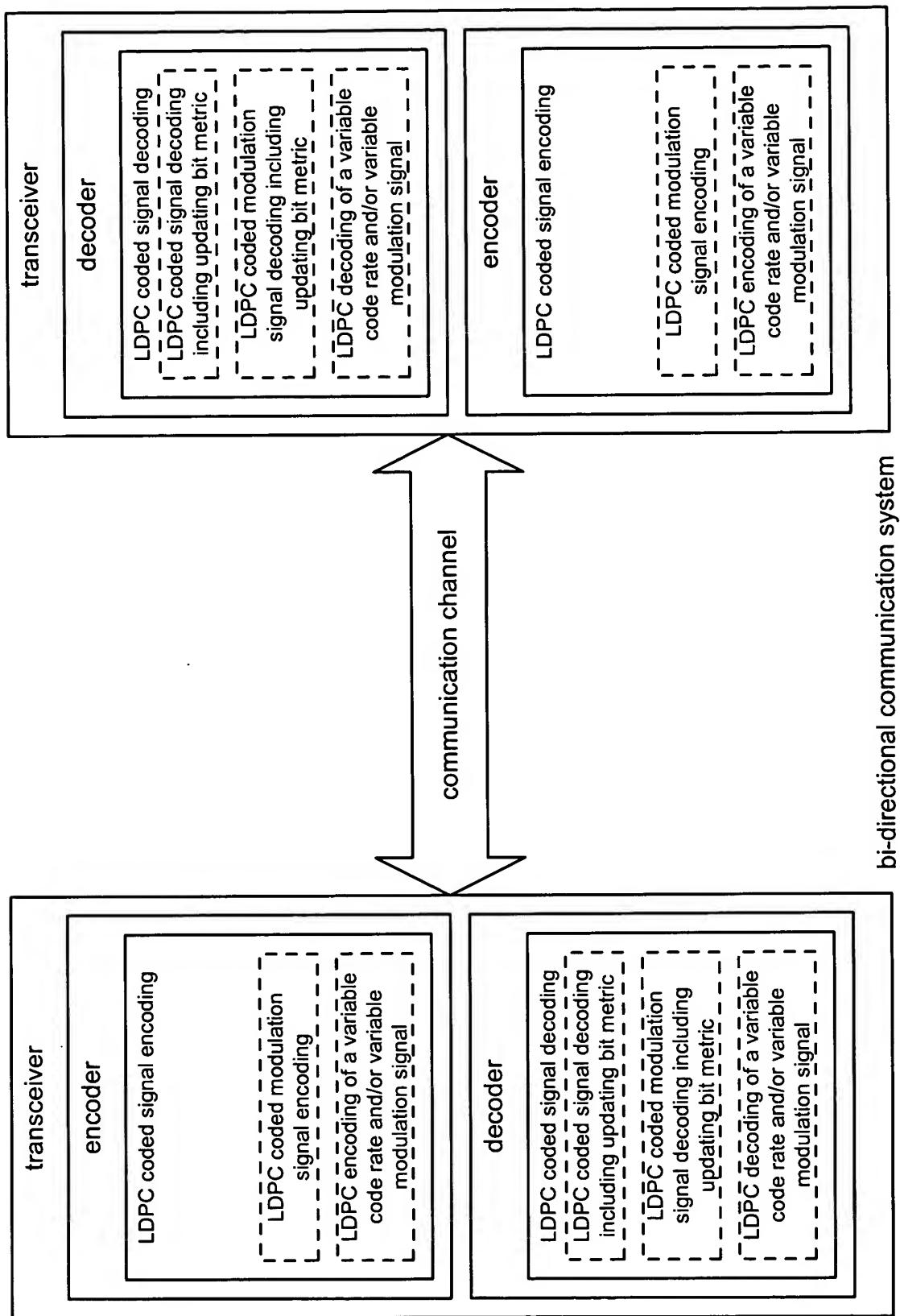
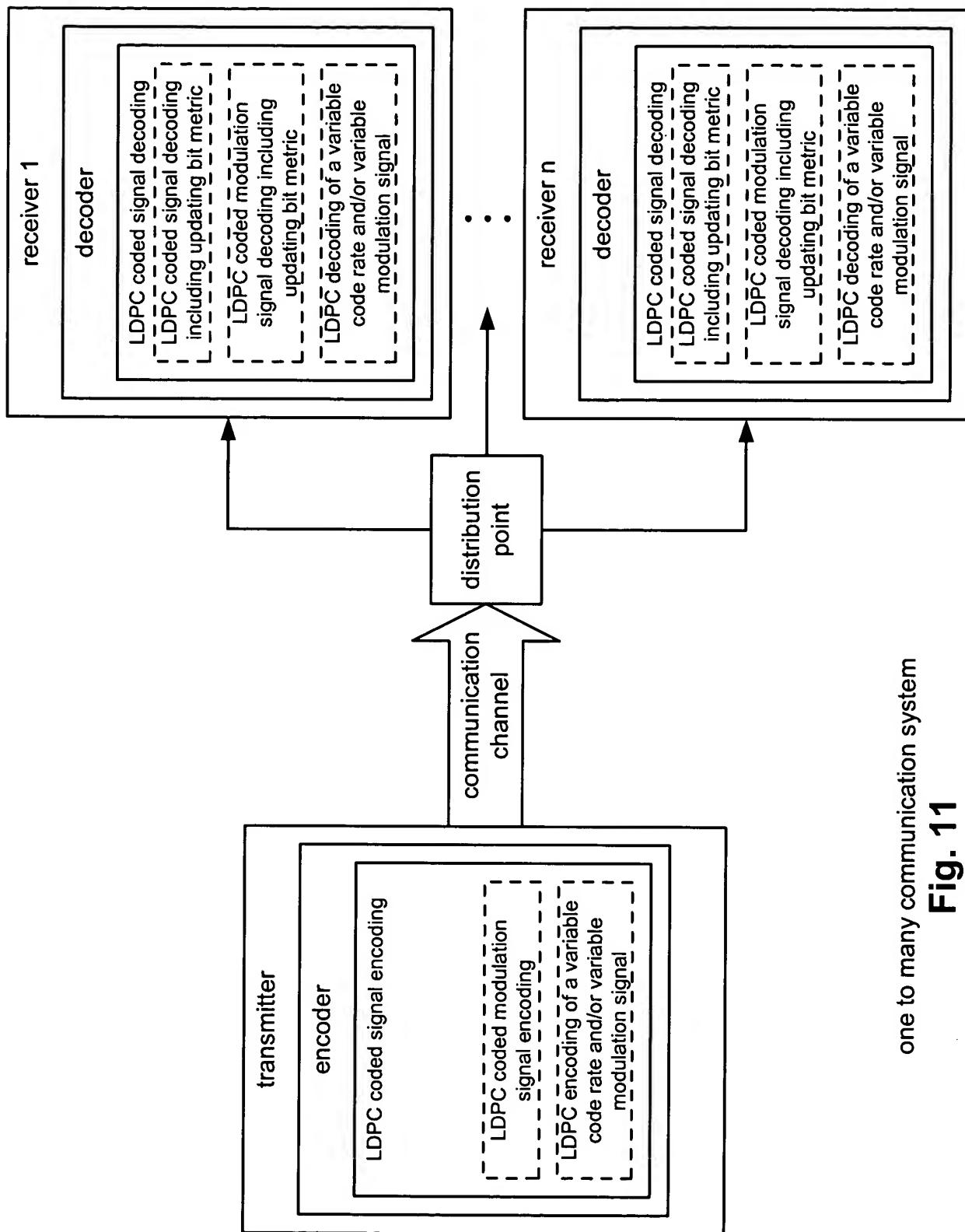
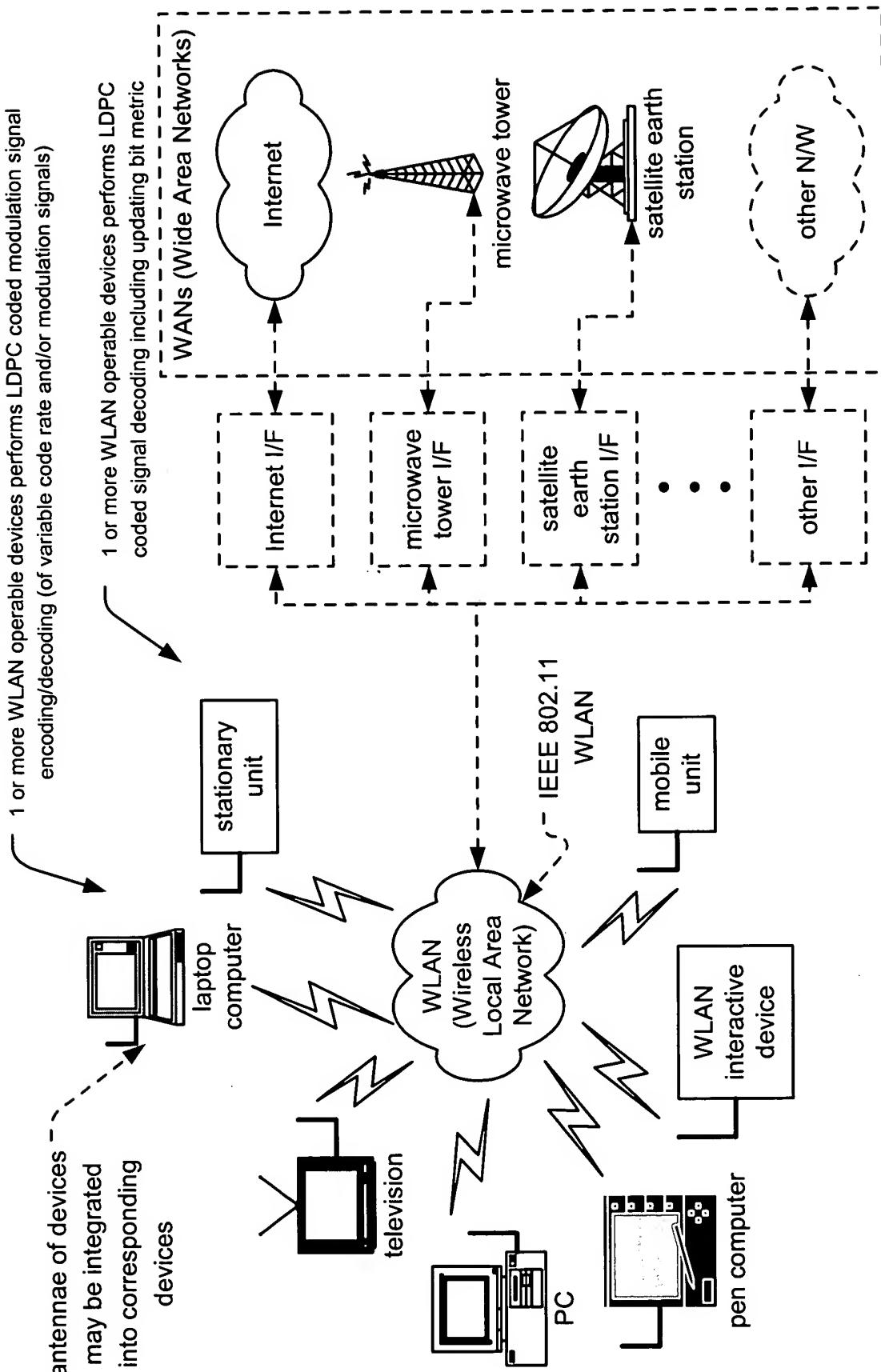
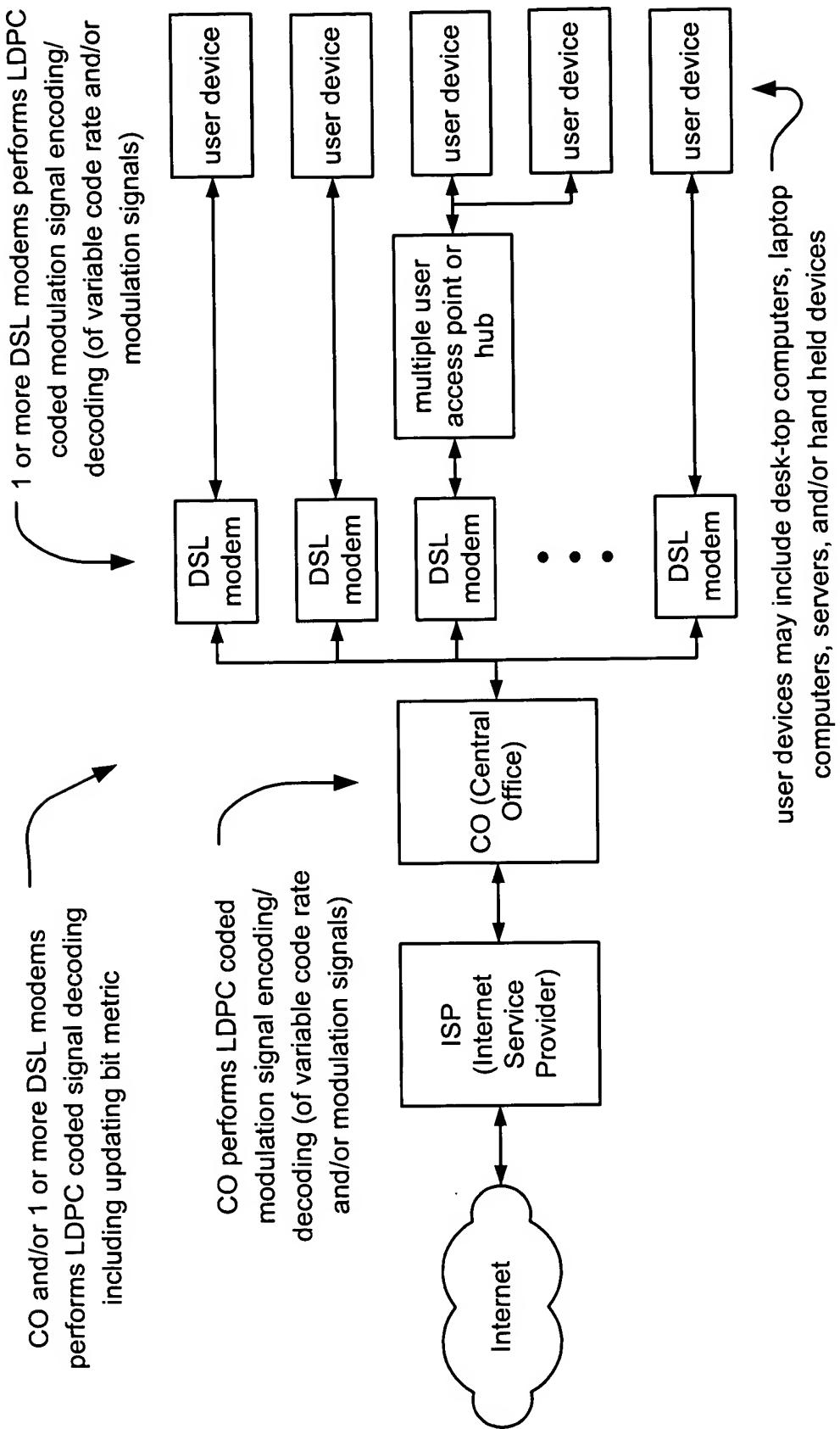


Fig. 10  
bi-directional communication system

**Fig. 11**

**Fig. 12**

WLAN (Wireless Local Area Network) communication system



DSL (Digital Subscriber Line) communication system

**Fig. 13**

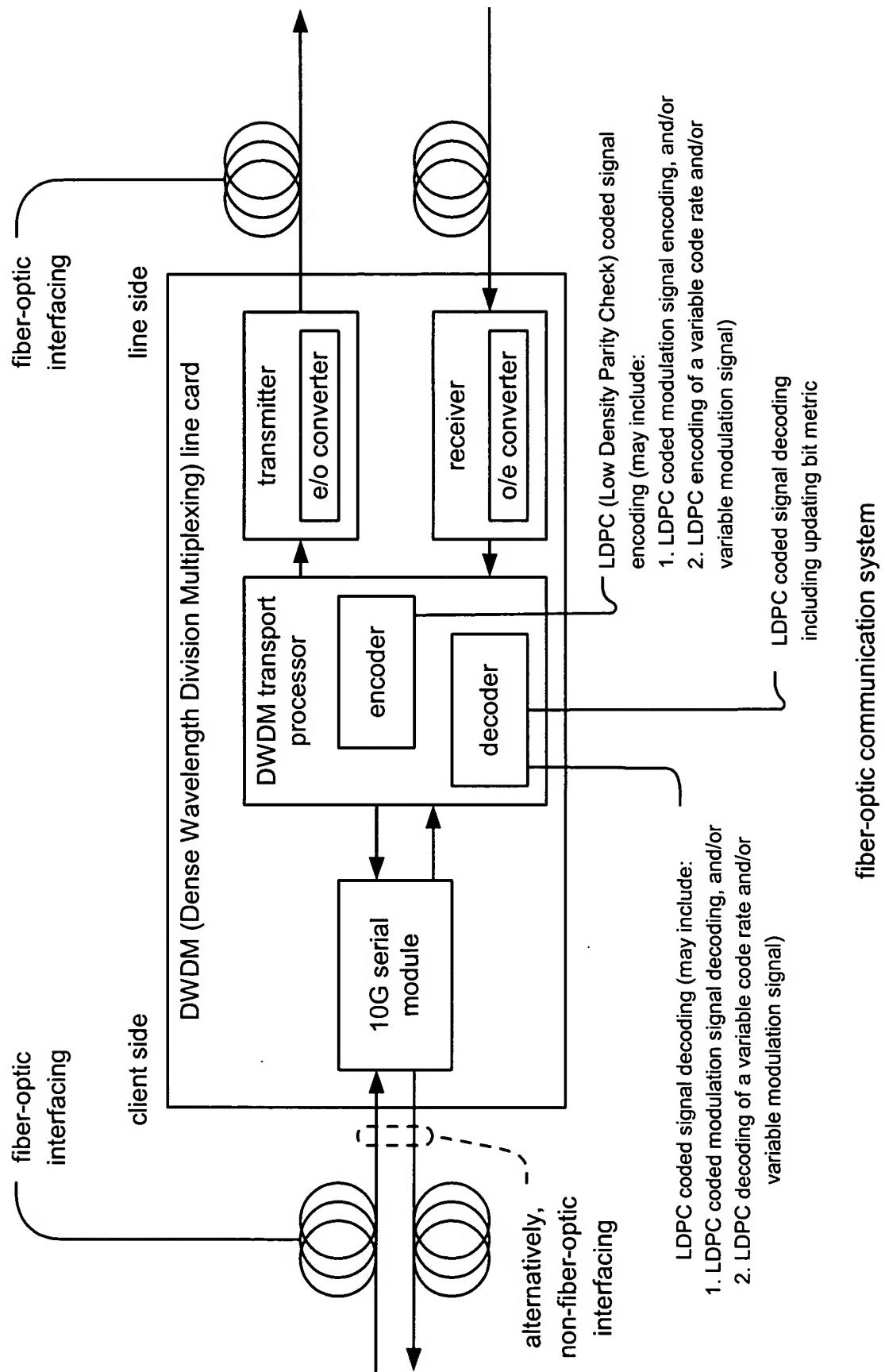
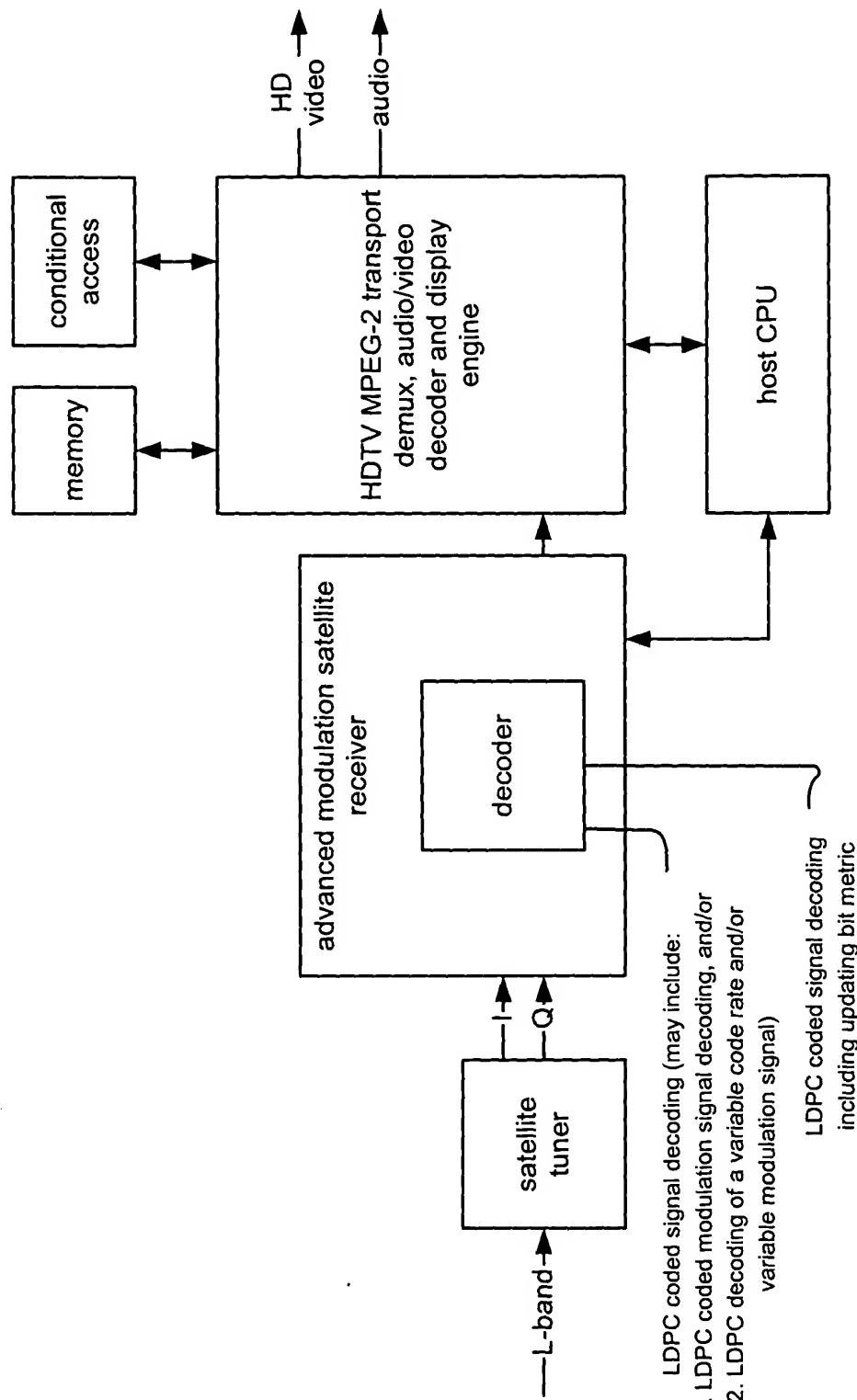
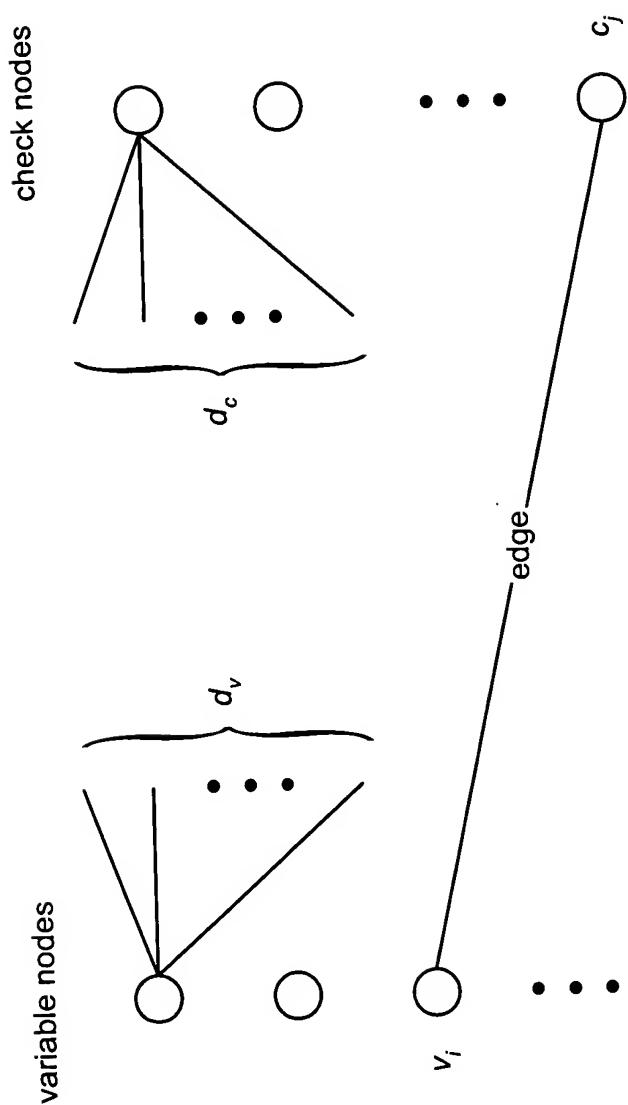


Fig. 14

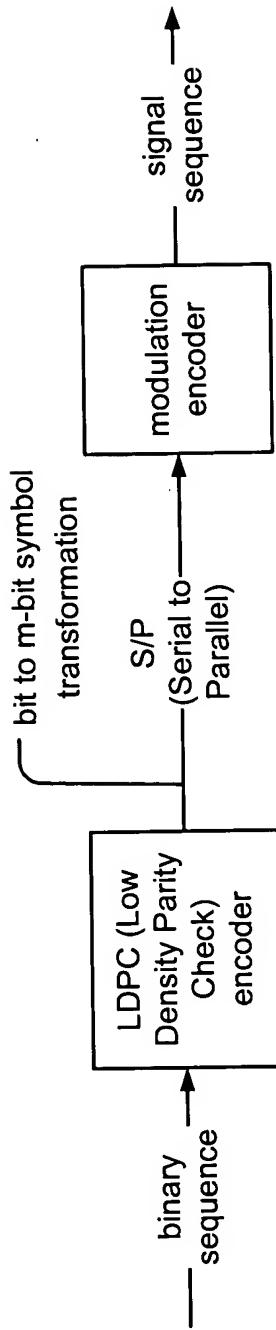


satellite receiver STB (Set Top Box) system  
**Fig. 15**

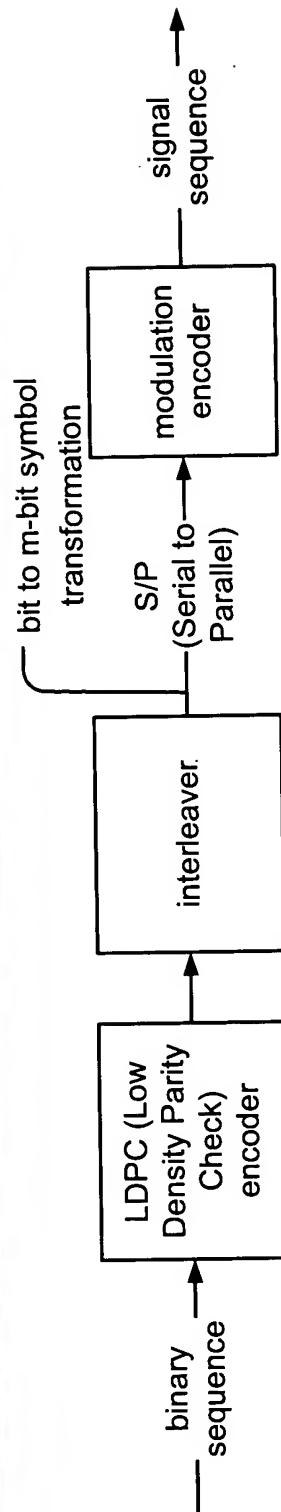


LDPC (Low Density Parity Check) code bipartite graph

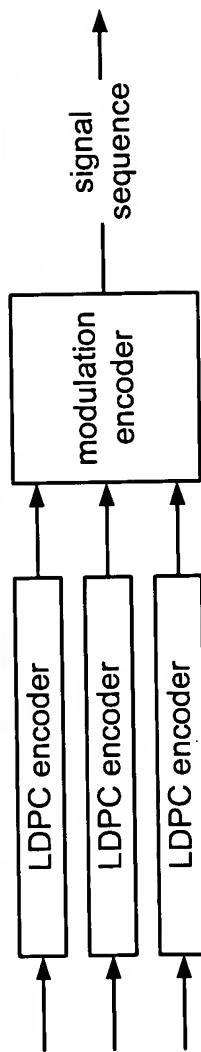
**Fig. 16**



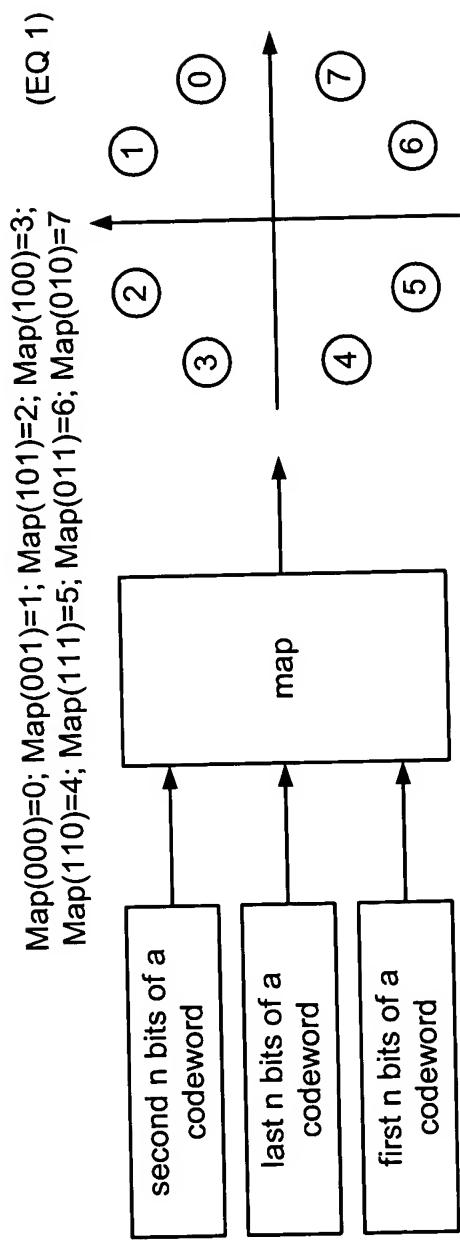
direct combining of LDPC (Low Density Parity Check) coding and modulation  
**Fig. 17A**



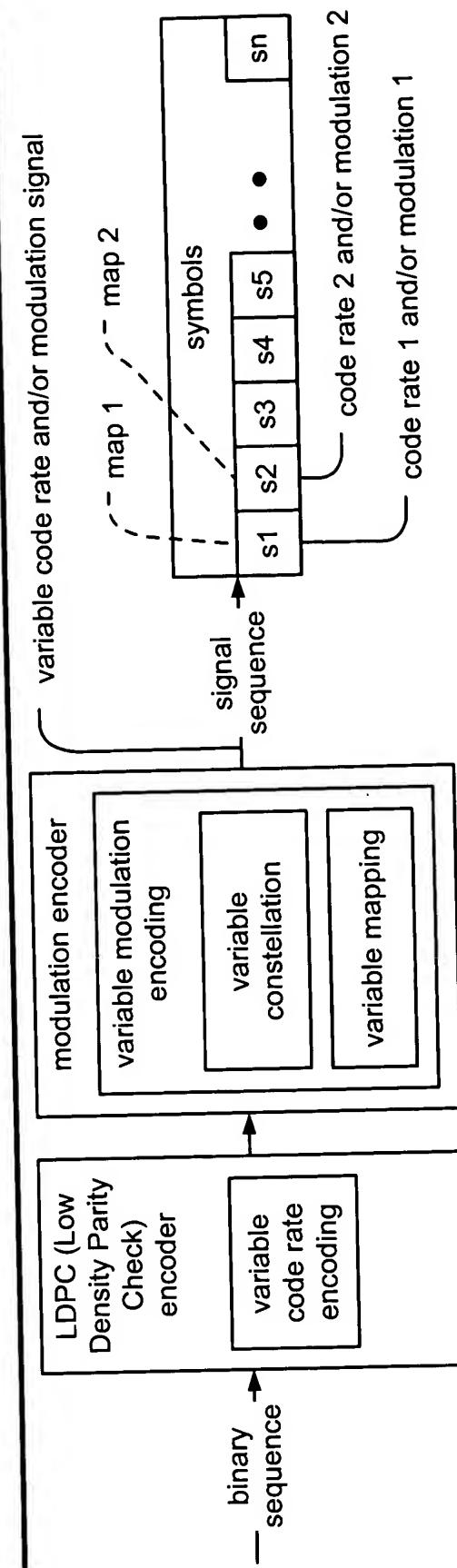
BICM (Bit Interleaved Coded Modulation)  
**Fig. 17B**



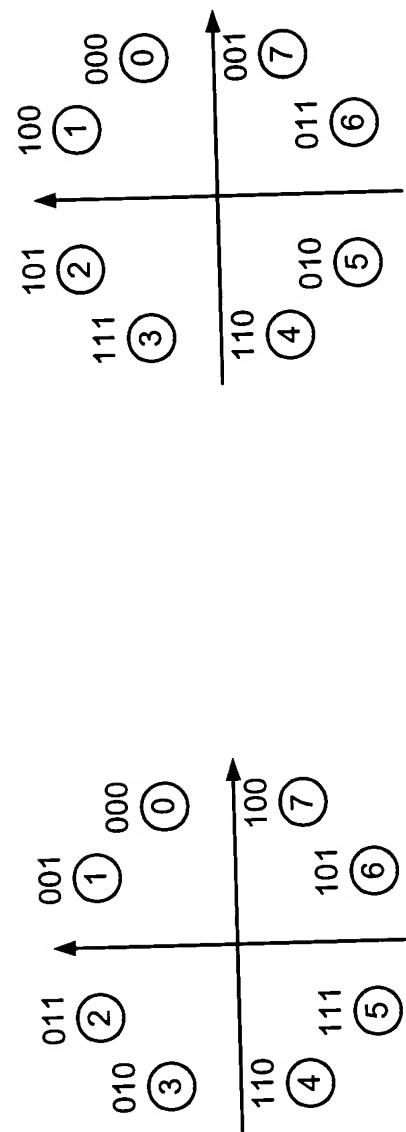
multilevel coded modulation  
**Fig. 17C**



HNS (Hughes Network System) proposal to DVB (Digital Video Broadcasting Project) standard  
**Fig. 18A**

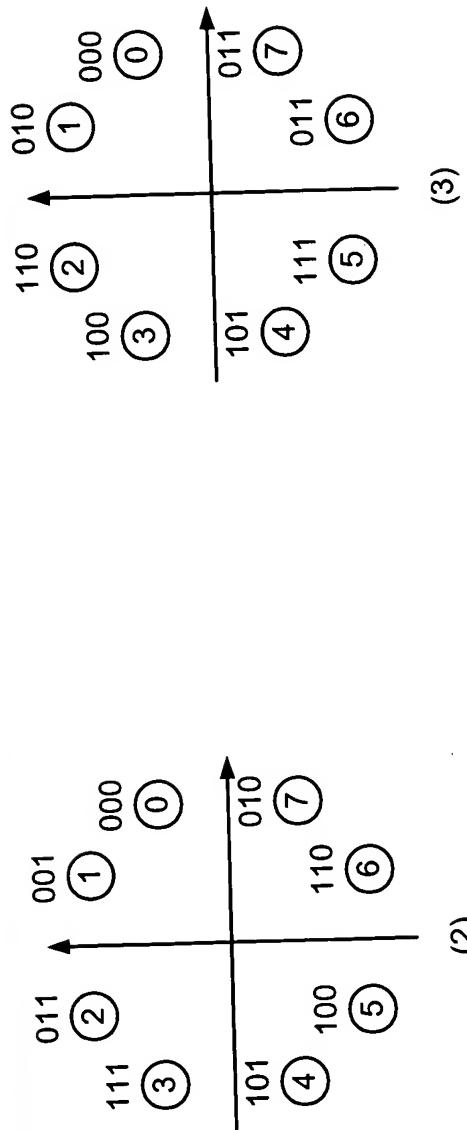


LDPC (Low Density Parity Check) coded modulation signal encoding  
**Fig. 18B**

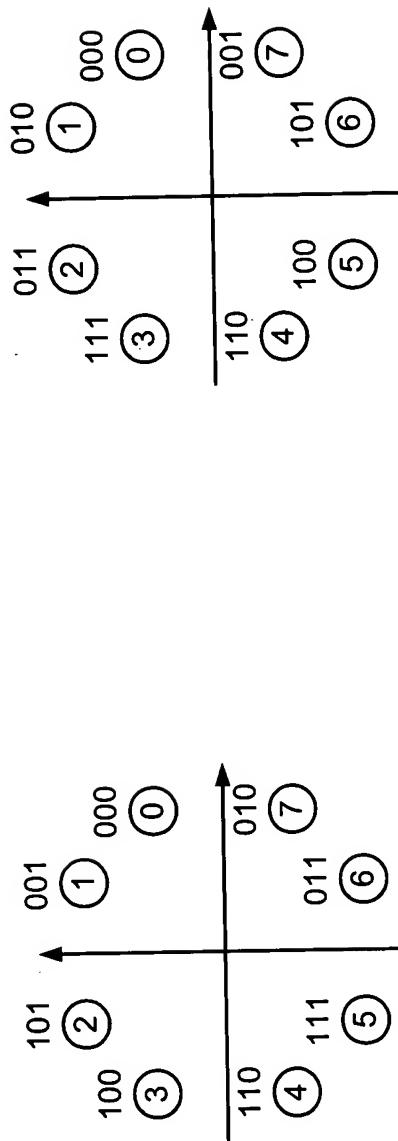


(1)

map 0 and map 1  
**Fig. 19A**

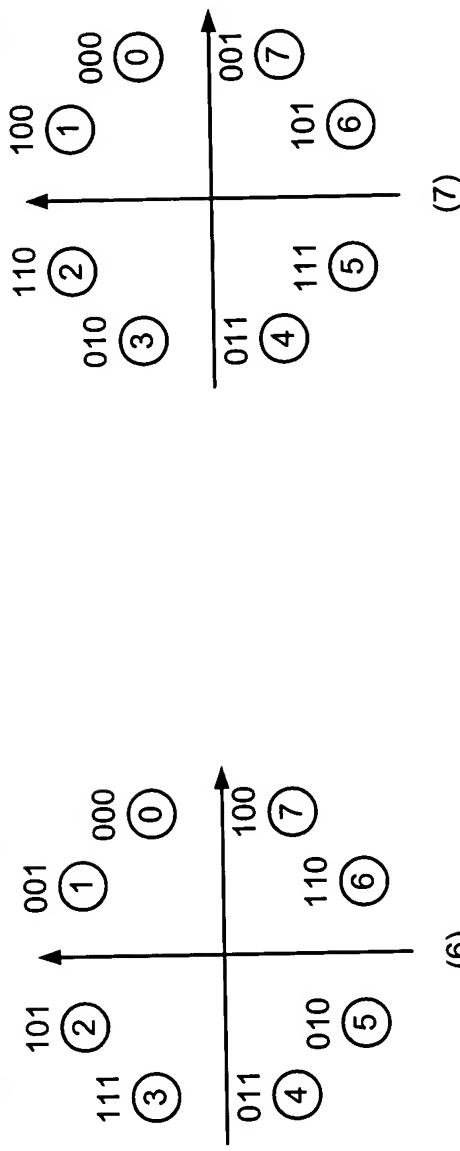


map 2 and map 3  
**Fig. 19B**



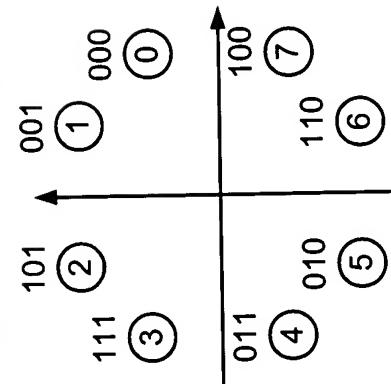
(4)

map 4 and map 5  
**Fig. 20A**



(5)

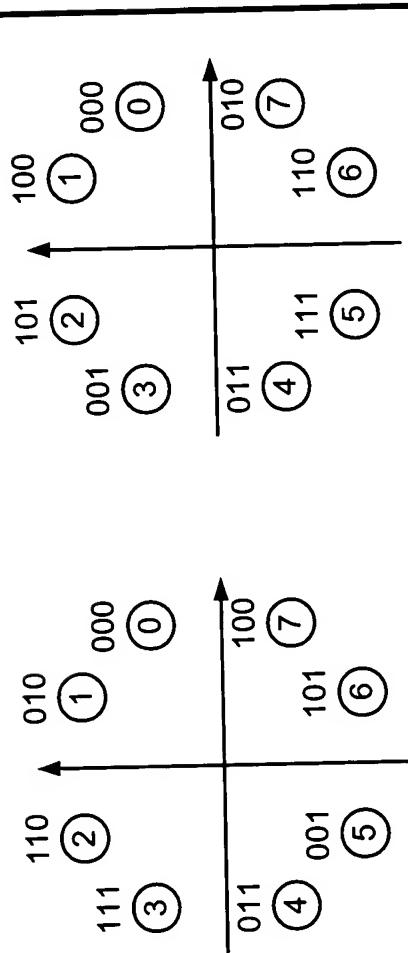
map 6 and map 7  
**Fig. 20B**



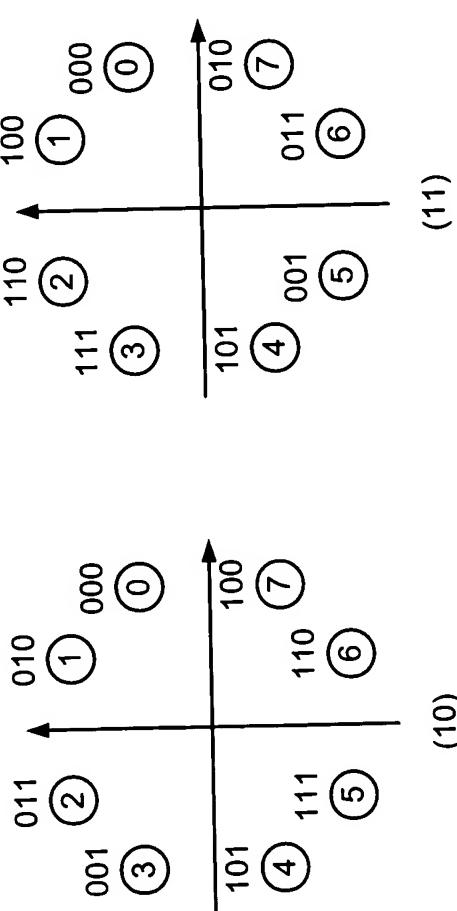
(6)

(7)

map number	# weak points at MSB	# weak points at LSB	# weak points at LSB
0	2	2	4
1	2	2	4
2	2	4	2
3	2	4	2
4	2	2	4
5	2	2	4
6	2	2	4
7	2	4	2
8	2	2	4
9	2	2	4
10	2	4	2
11	2	4	2

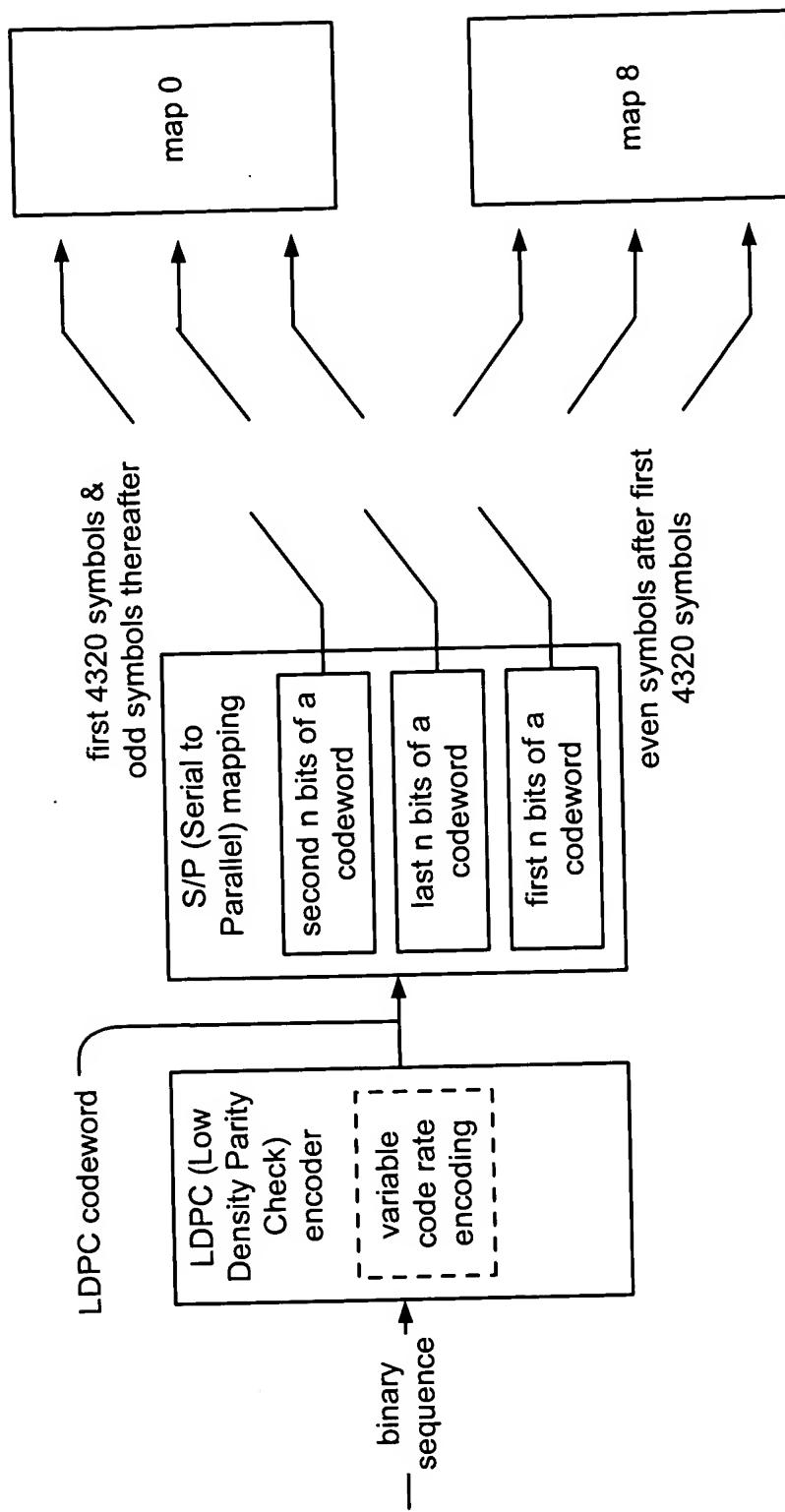


(8) map 8 and map 9  
**Fig. 21A**



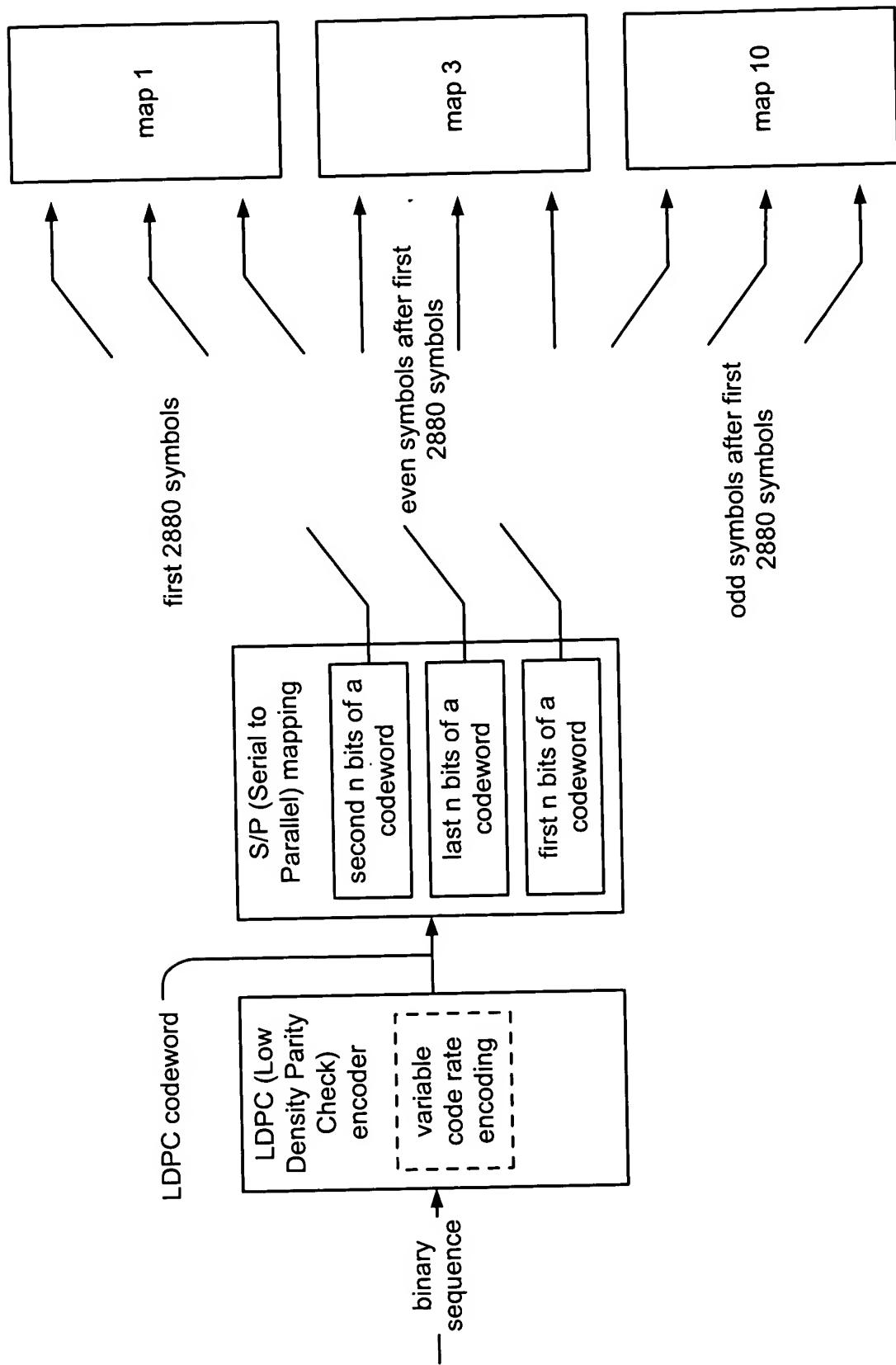
(10) map 10 and map 11  
**Fig. 21B**

Table I  
**Fig. 21C**



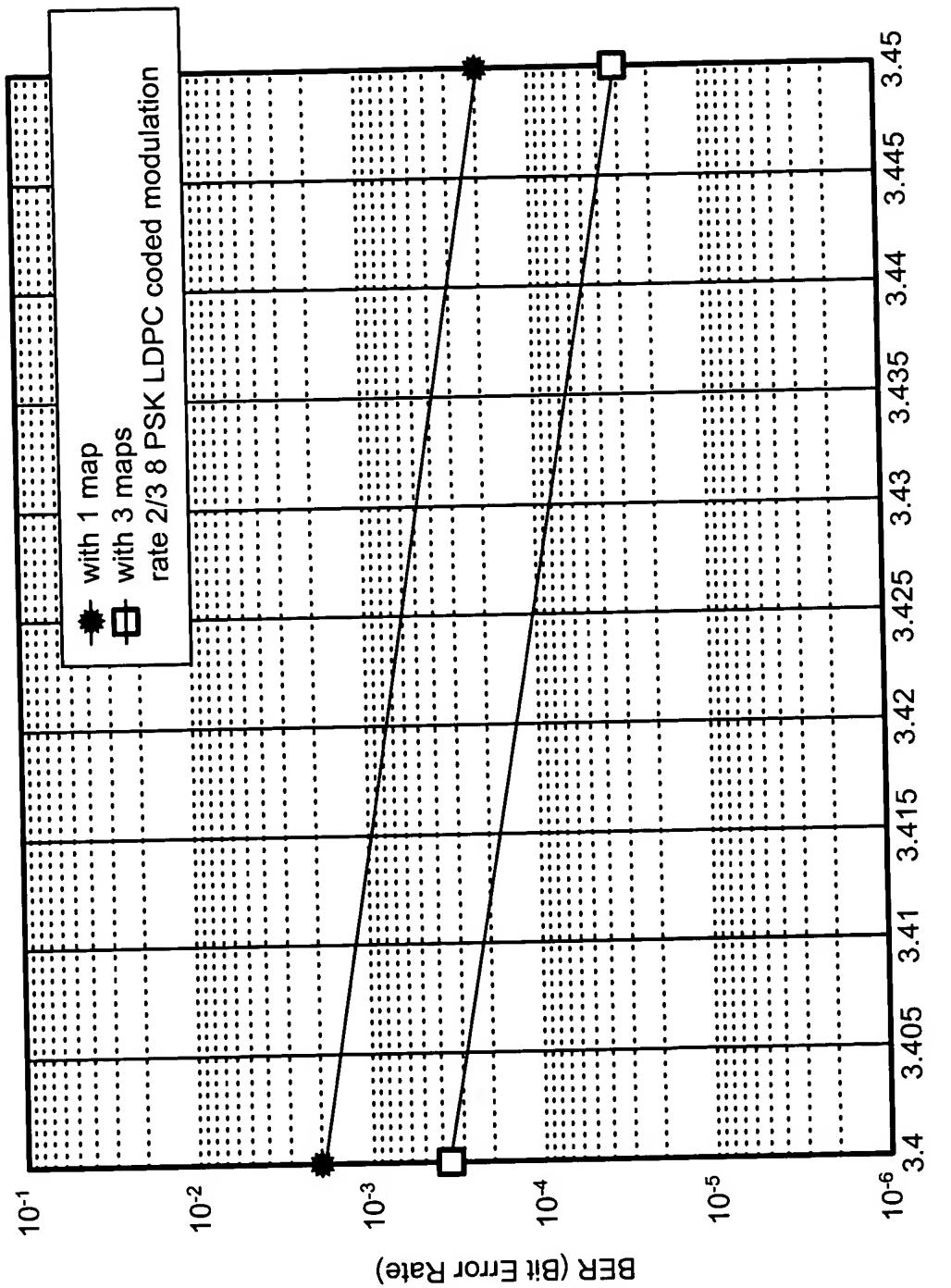
variable signal mapping LDPC (Low Density Parity Check) coded modulation system

**Fig. 22**



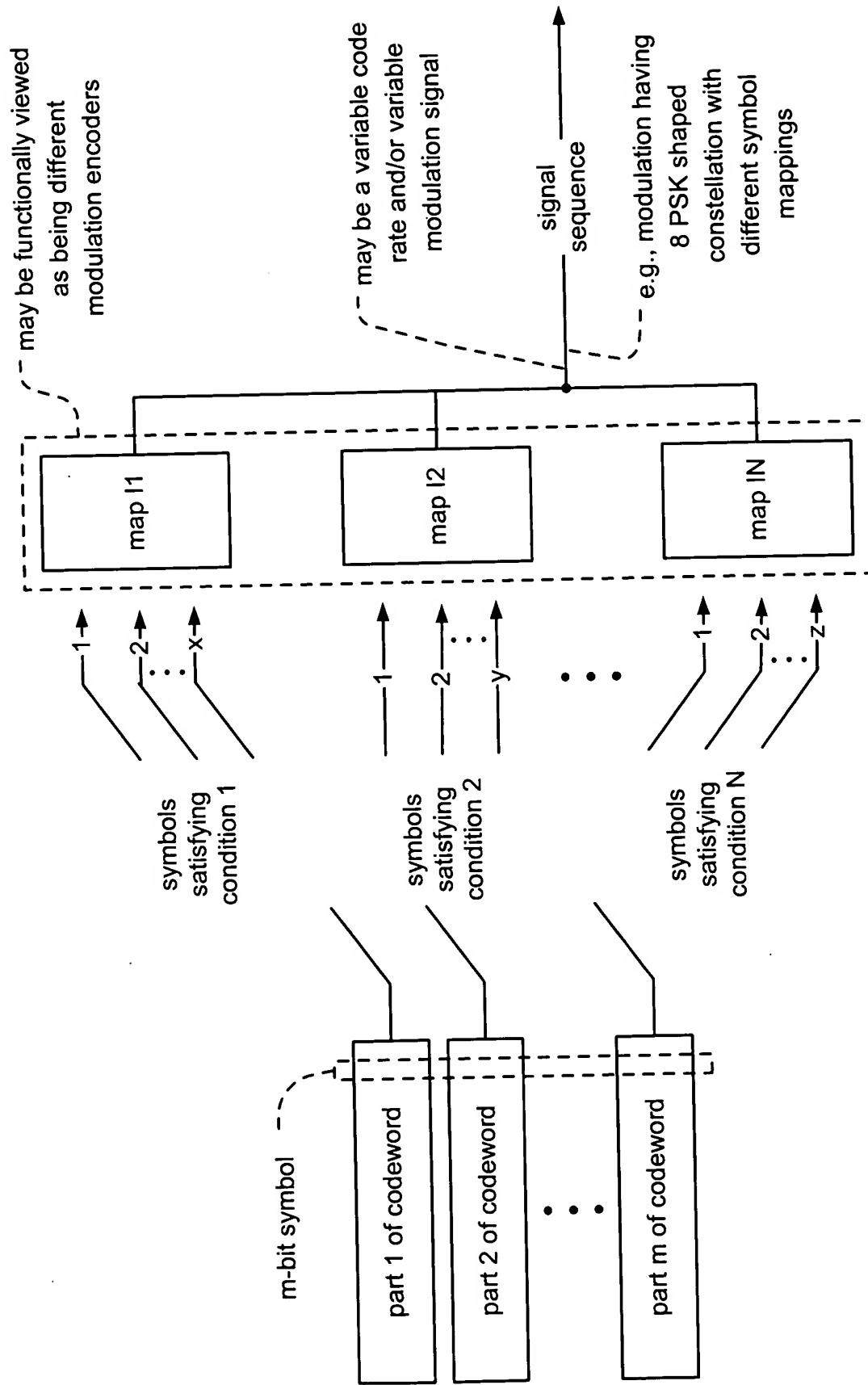
variable signal mapping LDPC (Low Density Parity Check) coded modulation system with code C\_2

Fig. 23



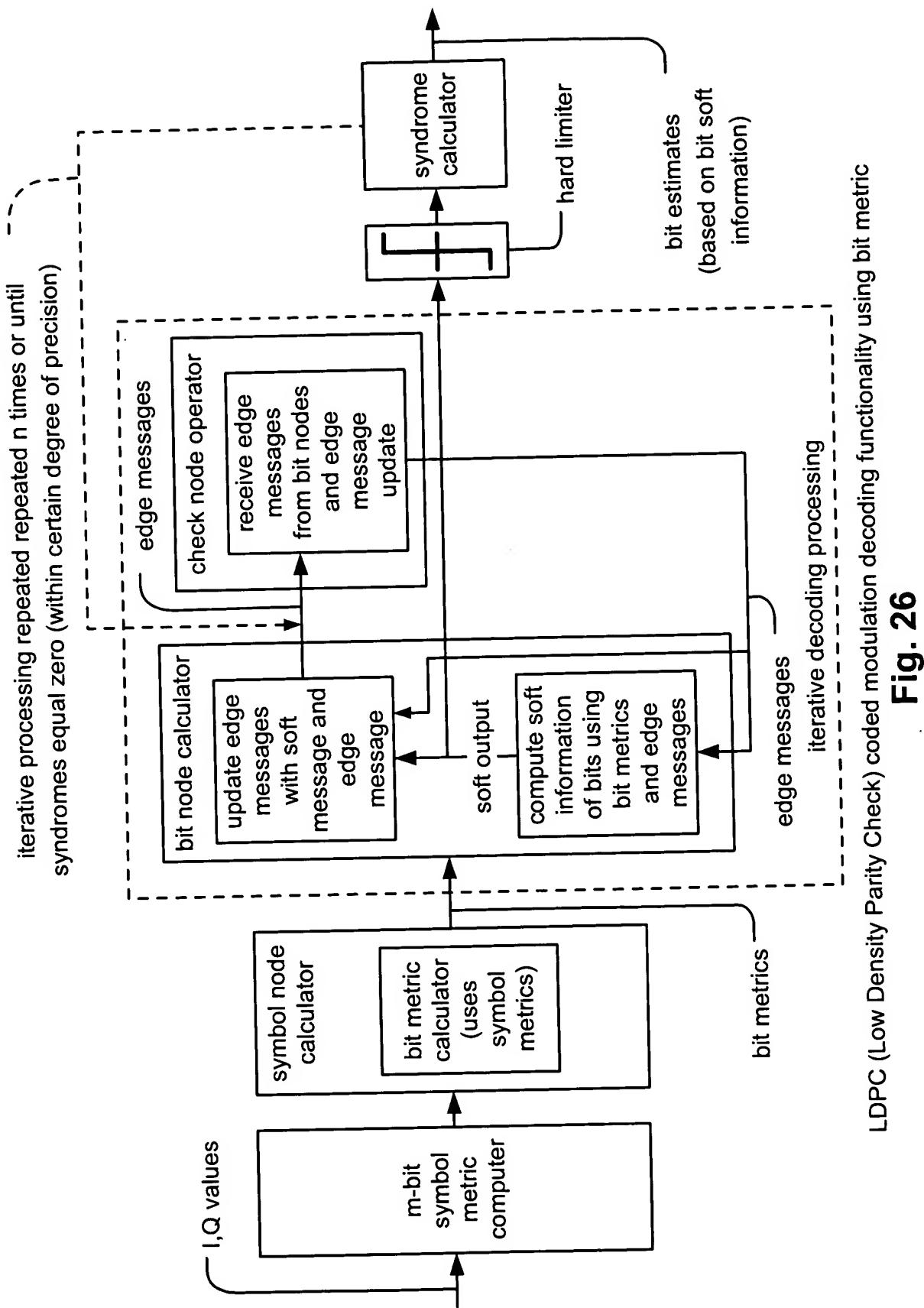
performance comparison of single map vs. multiple maps (1 map vs. 3 maps)

**Fig. 24**



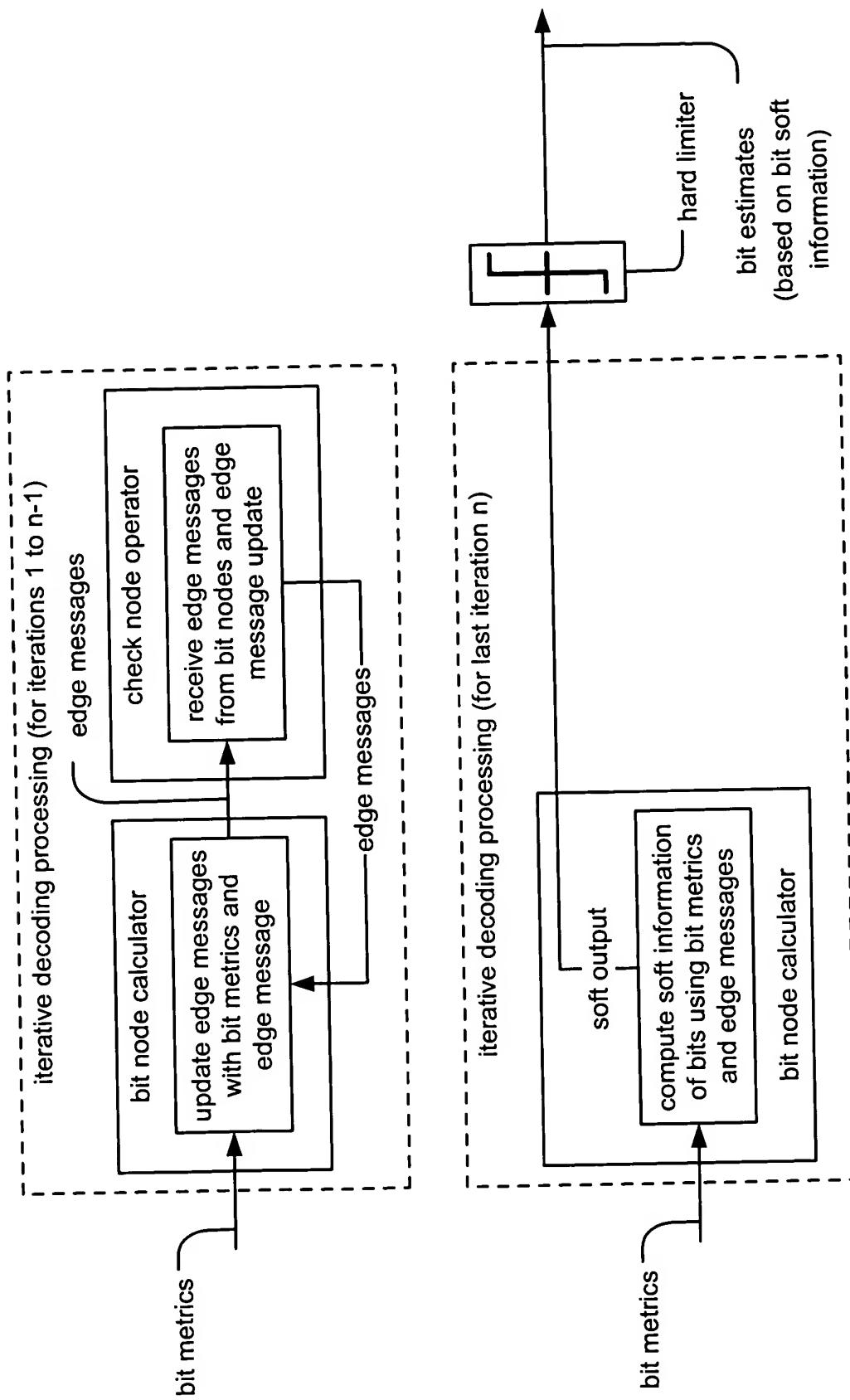
variable signal mapping LDPC (Low Density Parity Check) coded modulation system

**Fig. 25**



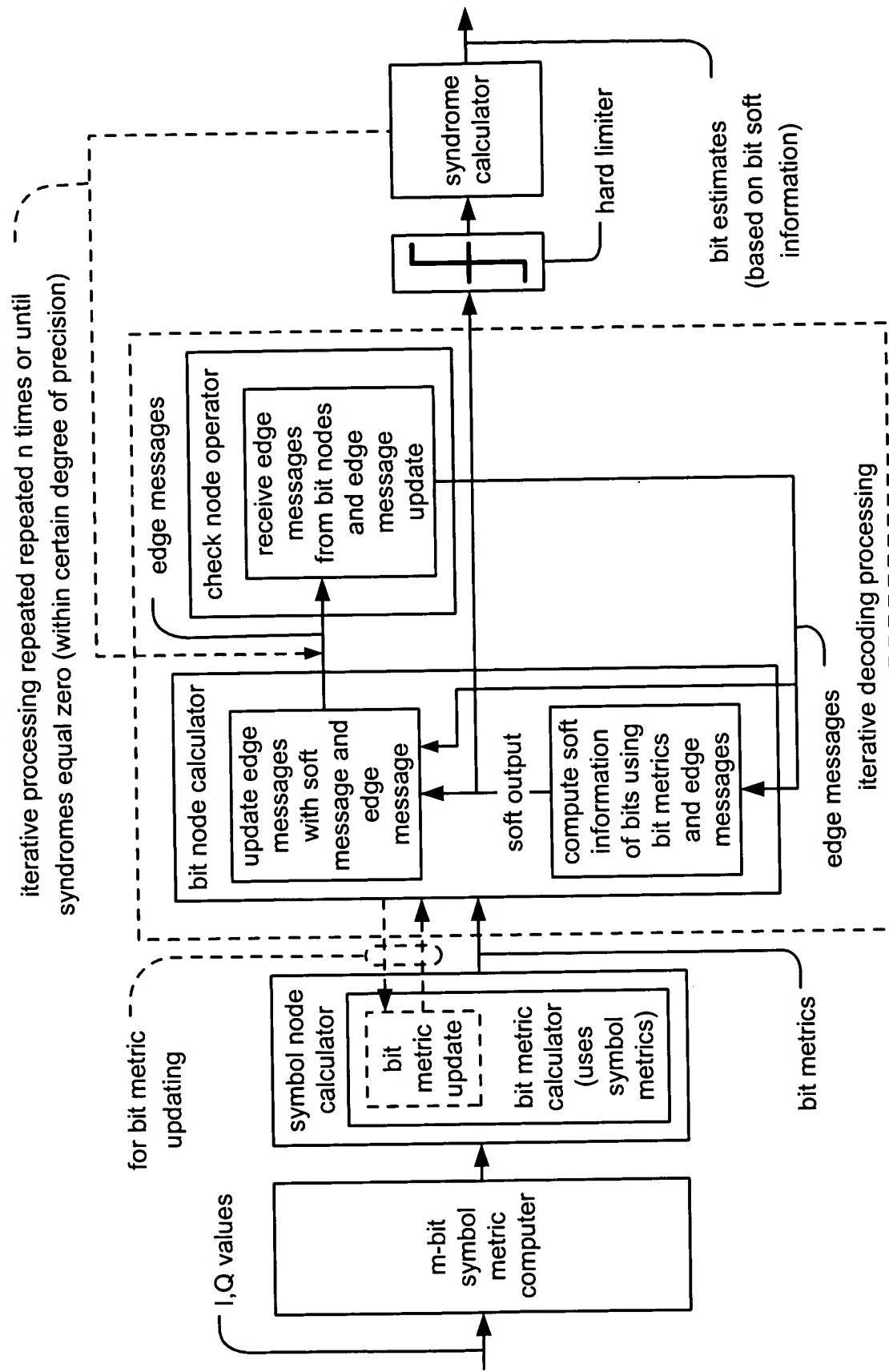
|| DPC (Low Density Parity Check) coded modulation decoding functionality using bit metric

Fig. 26



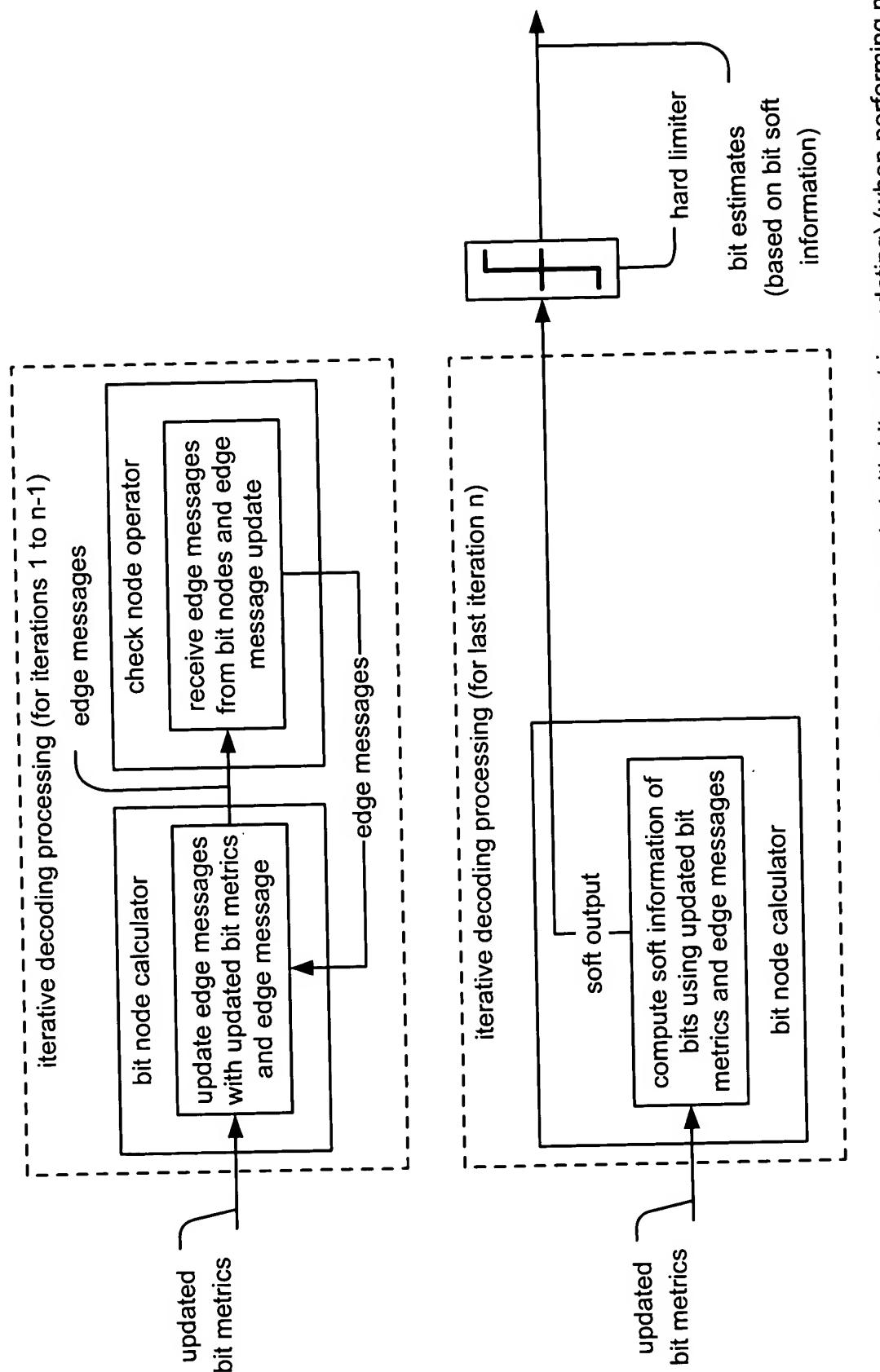
alternative LDPC coded modulation decoding functionality using bit metric (when performing n number of iterations)

Fig. 27



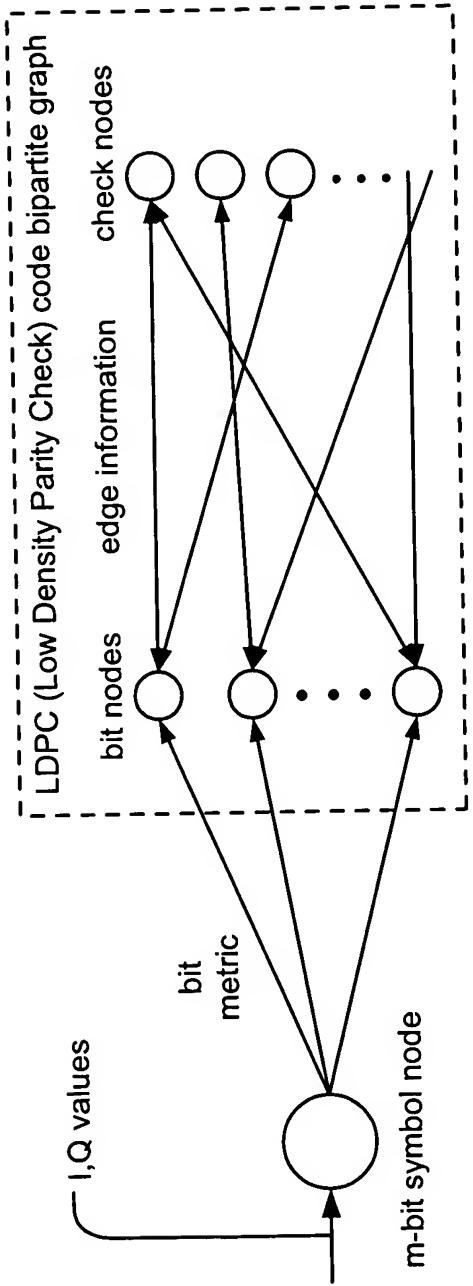
LDPC (Low Density Parity Check) coded modulation decoding functionality using bit metric (with bit metric updating)

**Fig. 28**



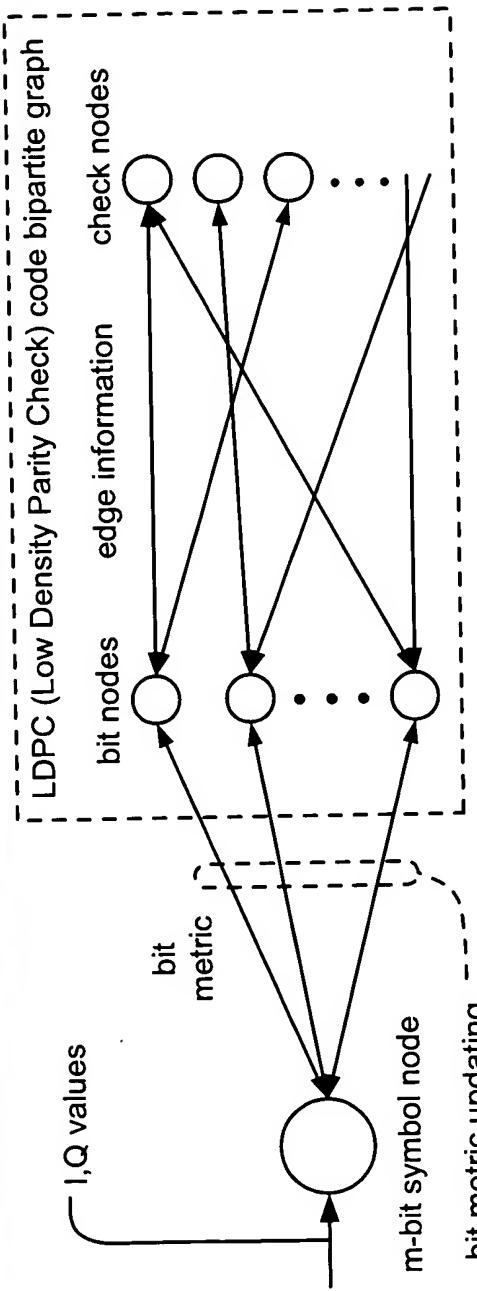
alternative LDPC coded modulation decoding functionality using bit metric (with bit metric updating) (when performing  $n$  number of iterations)

**Fig. 29**



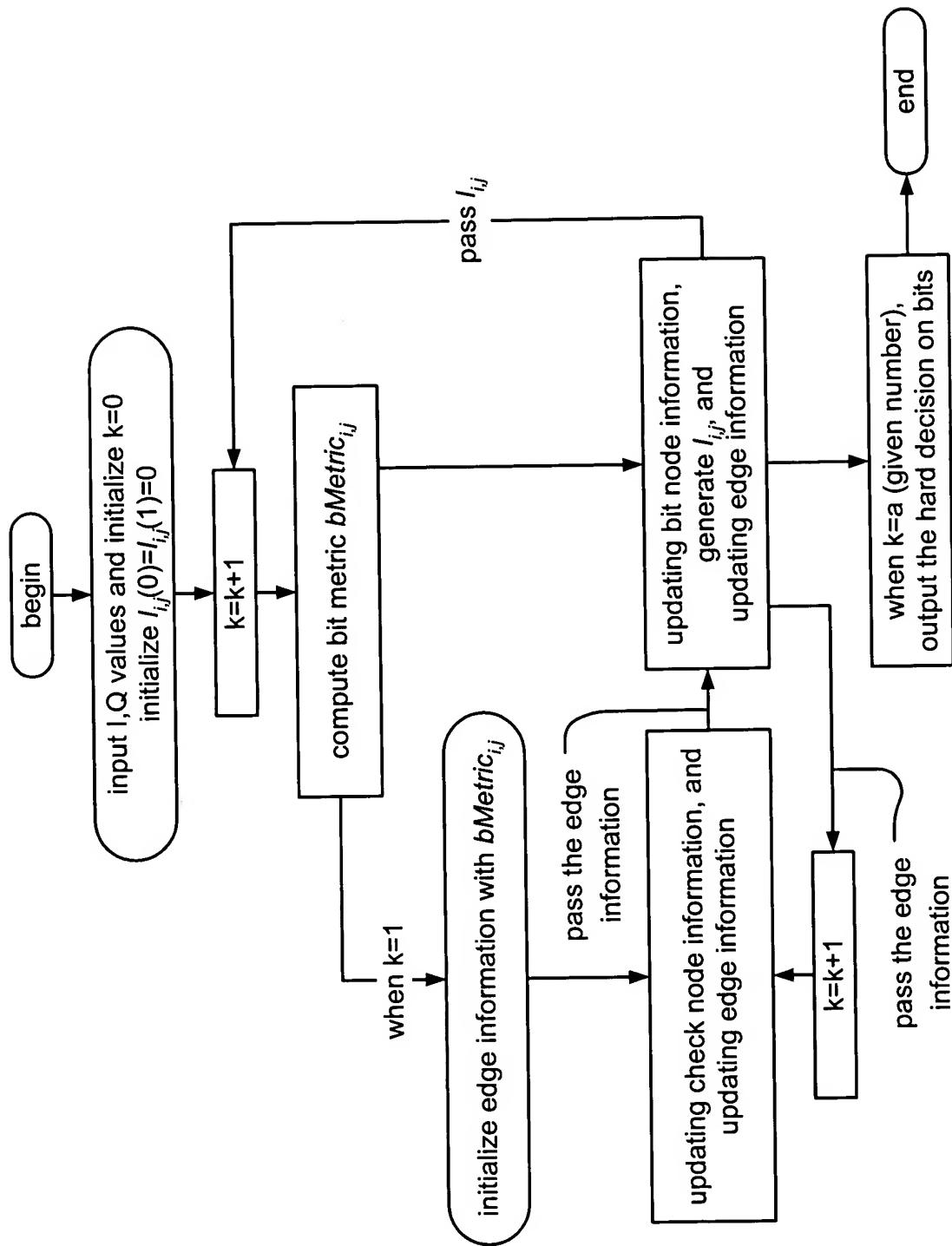
bit decoding using bit metric (shown with respect to LDPC (Low Density Parity Check) code bipartite graph)

**Fig. 30A**



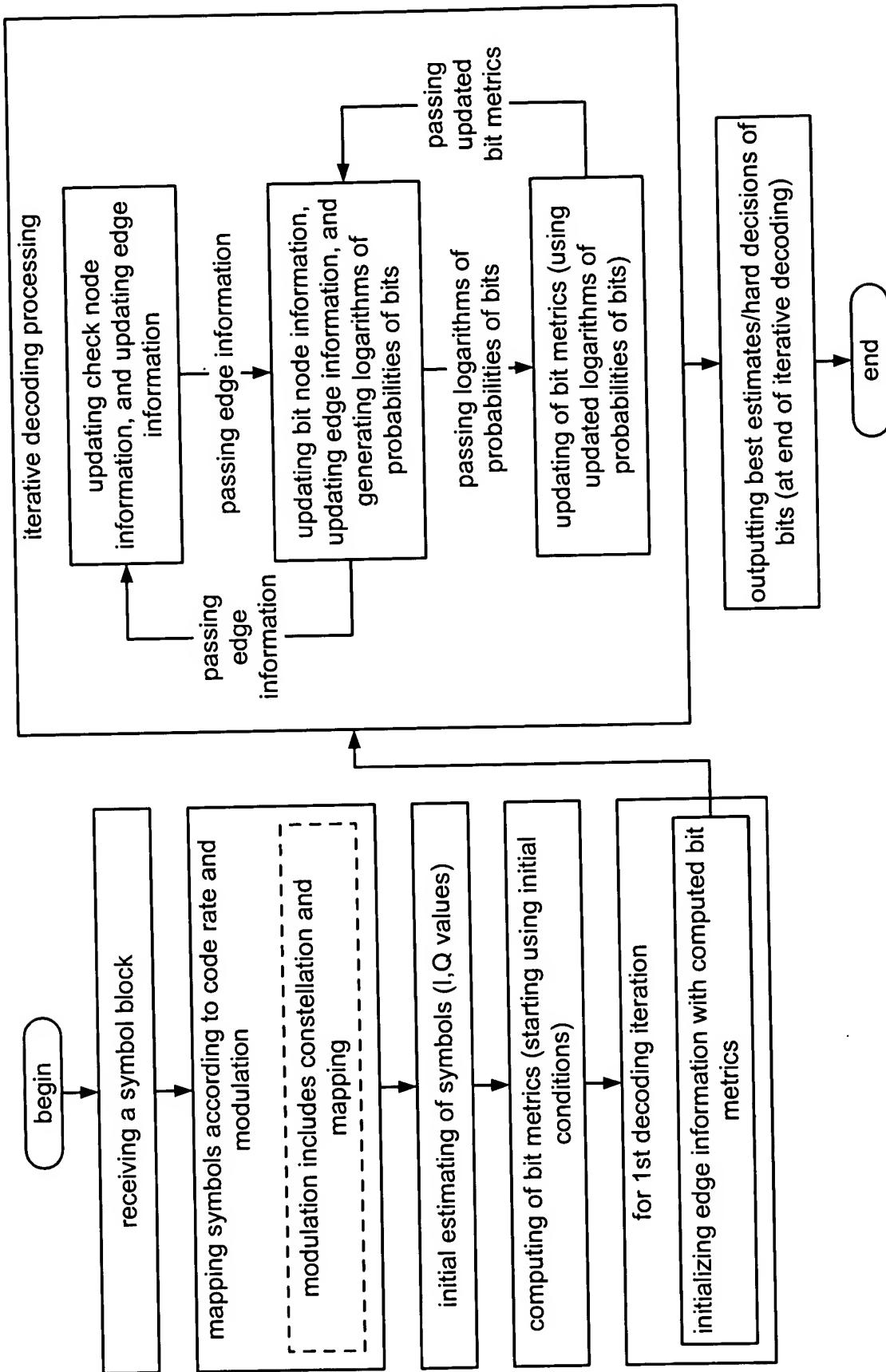
bit decoding using bit metric updating (shown with respect to LDPC (Low Density Parity Check) code bipartite graph)

**Fig. 30B**



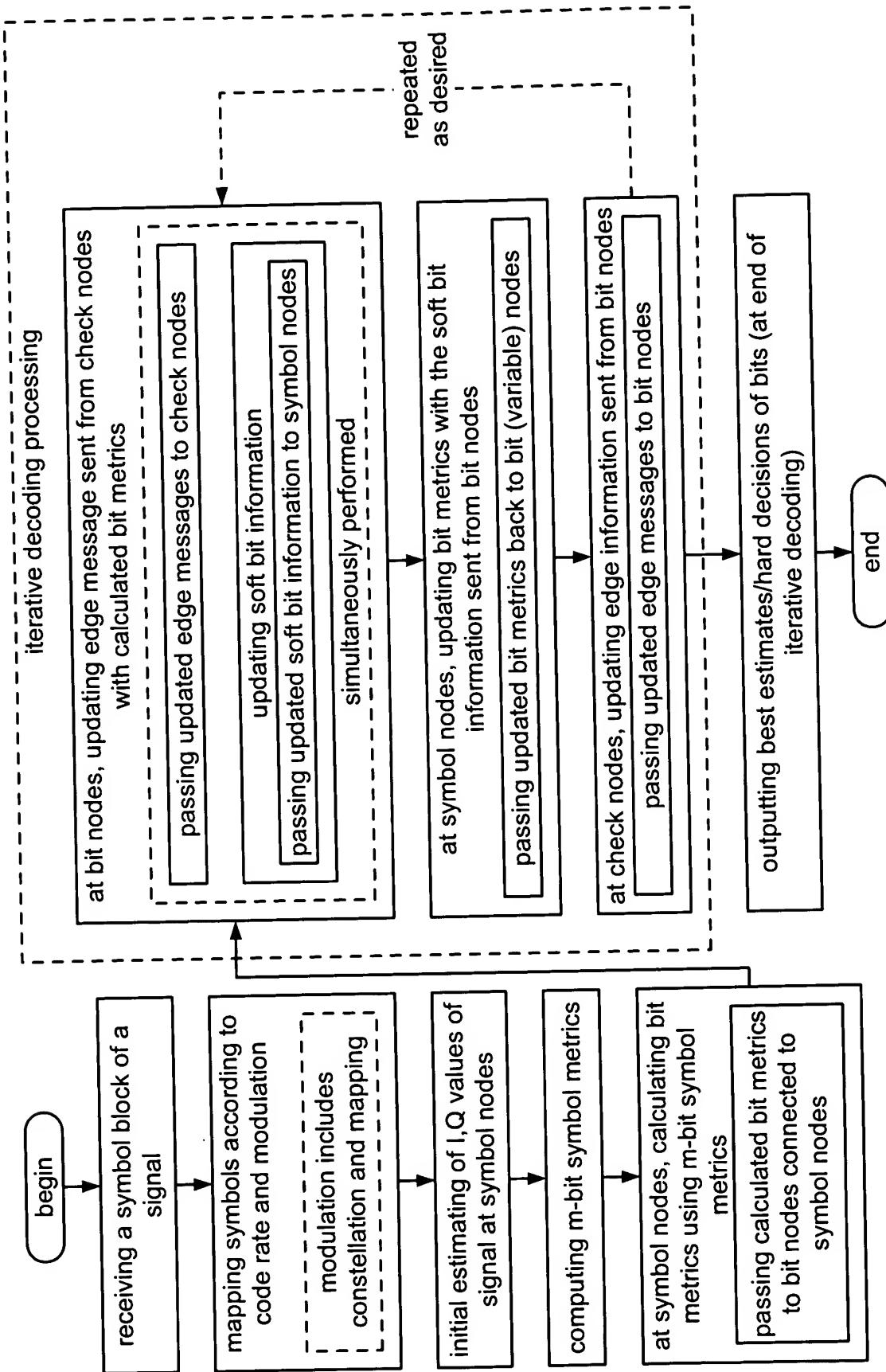
flowchart of decoding LDPC (Low Density Parity Check) coded modulation signal with metric updating

**Fig. 31**



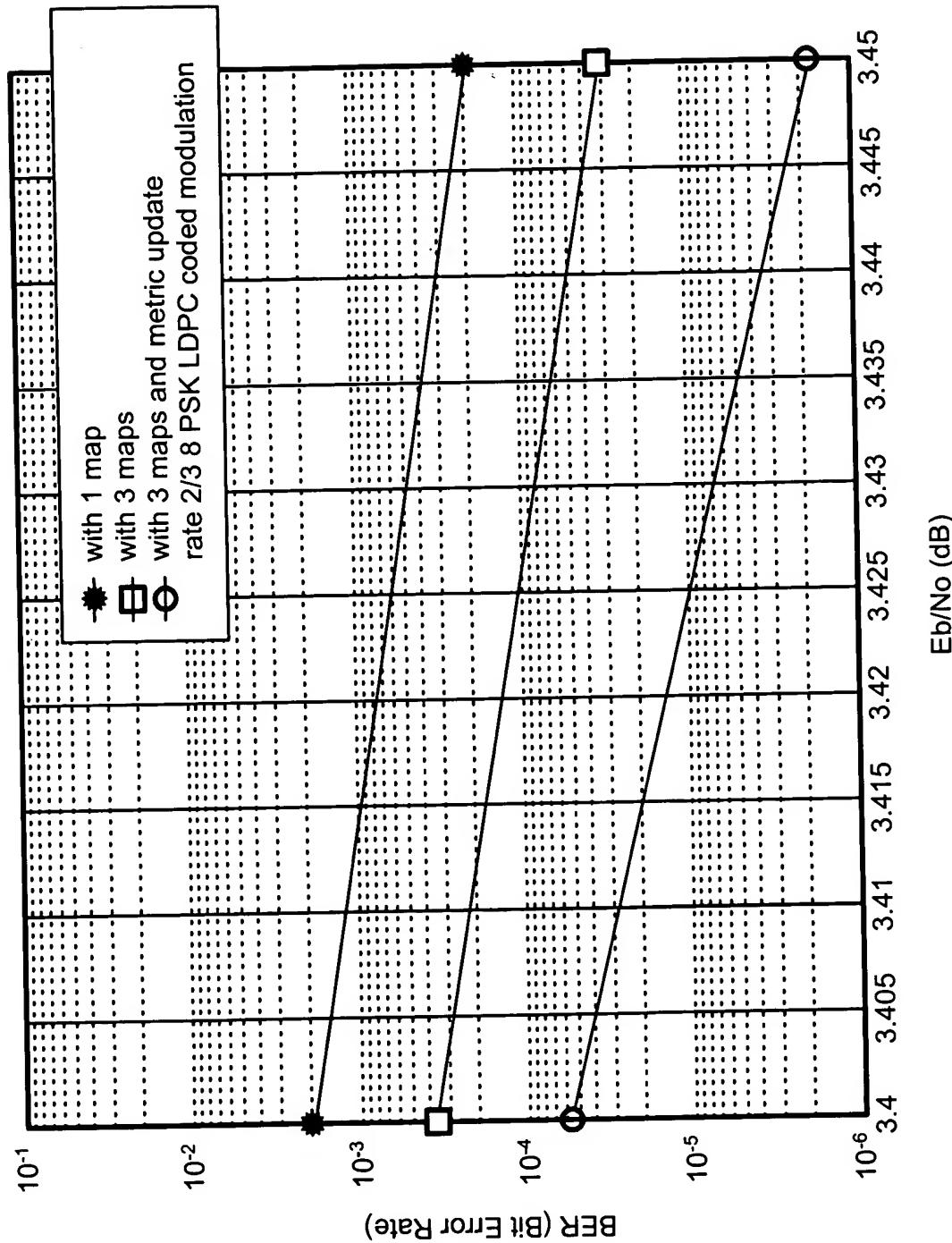
method for decoding LDPC (Low Density Parity Check) coded modulation signal with update metric

**Fig. 32**



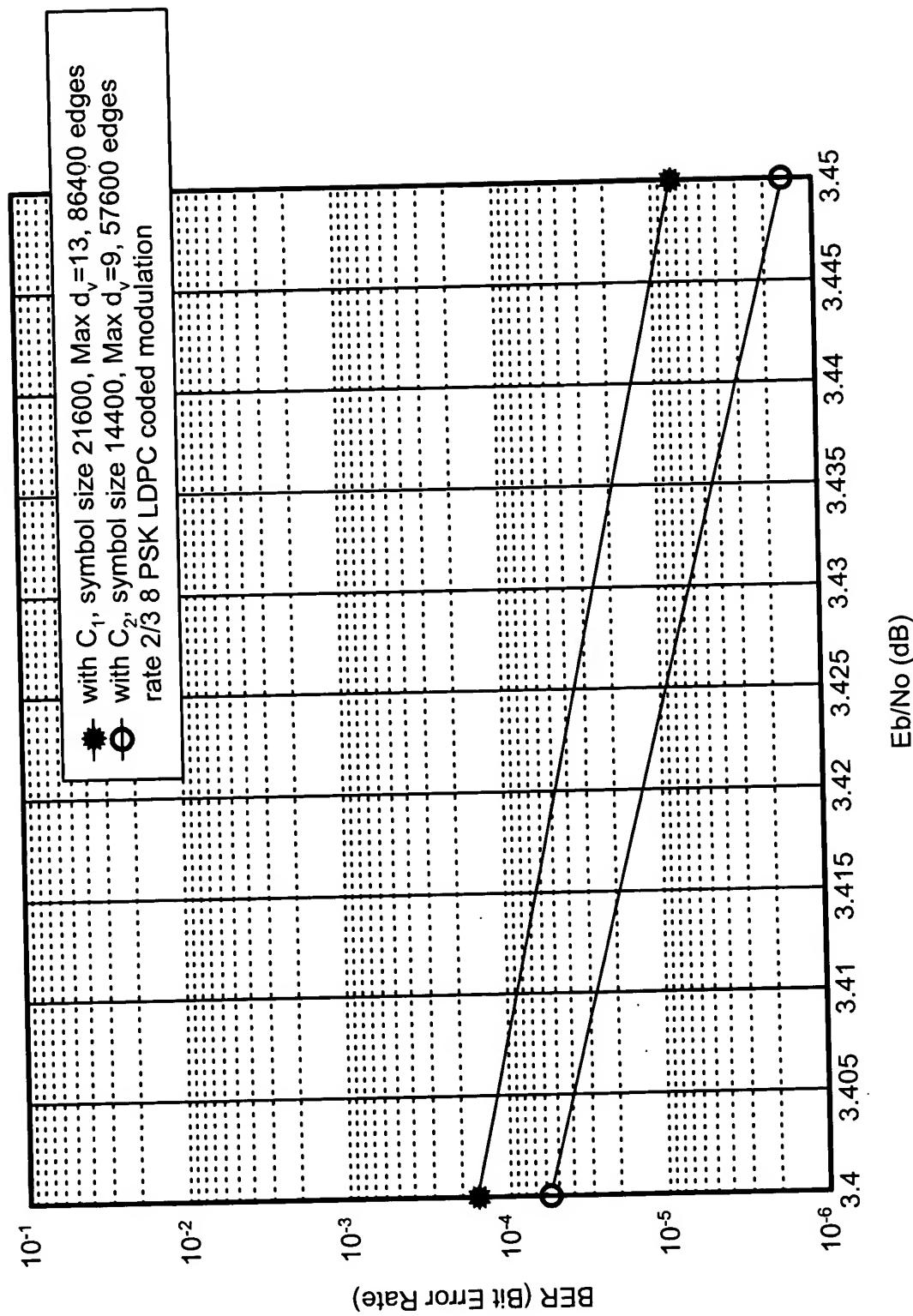
method for decoding LDPC coded modulation signal with update metric (see LDPC code bipartite graph of Fig. 26B)

**Fig. 33**



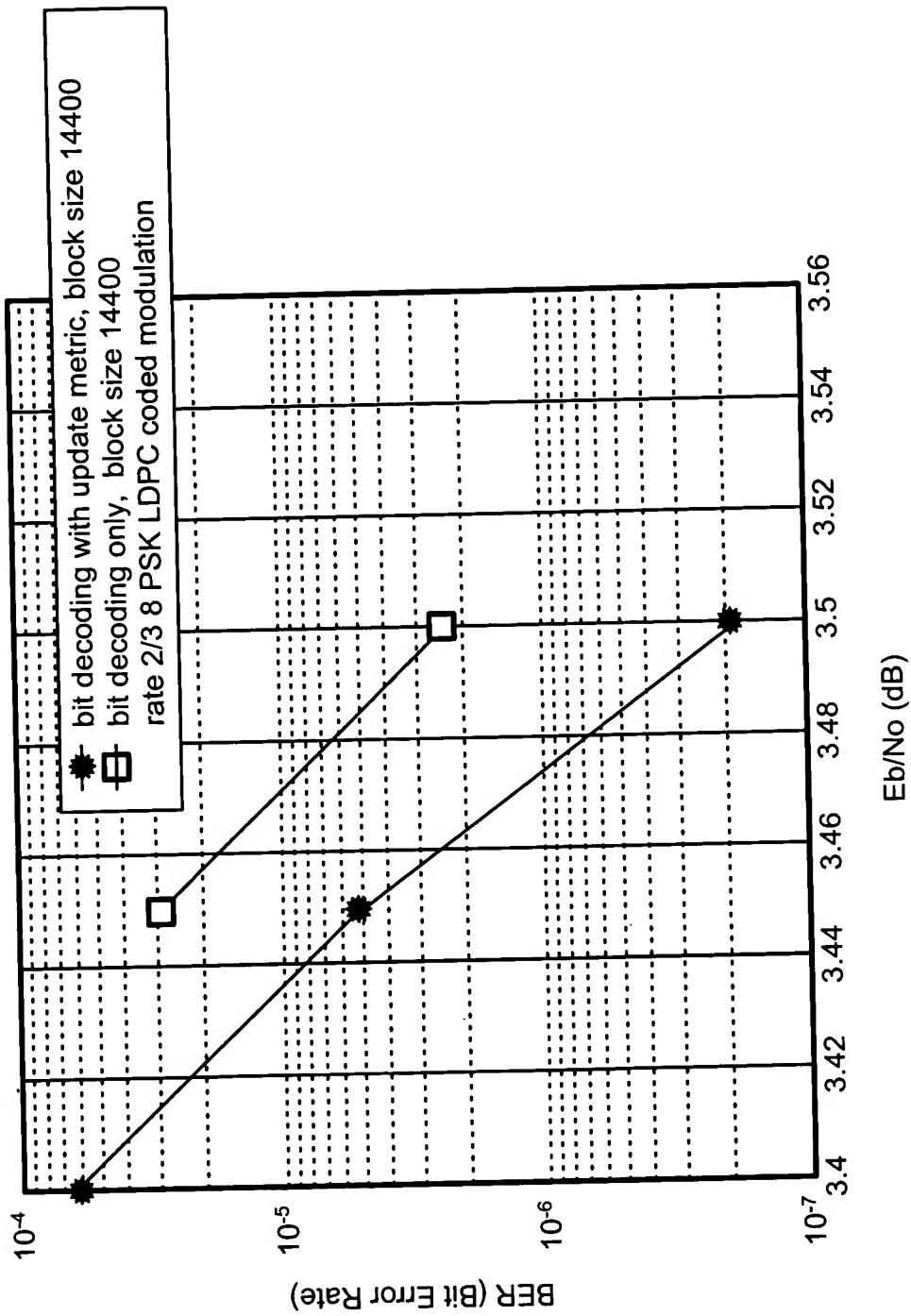
performance comparison of LDPC (Low Density Parity Check) coded modulation decoding processing for differently mapped signals (1 of which performs metric updating) (shown as using code C\_2)

**Fig. 34**



performance of LDPC coded modulation decoding of different symbol size  
(1. block with 21600 symbols, 3 bits per symbol and 2. block with 14400 symbols, 3 bits per symbol)

**Fig. 35**



performance comparison of bit decoding vs. bit decoding with metric updating of LDPC (Low Density Parity Check) coded modulation signals

**Fig. 36**